



REPORT

BASELINE HUMAN HEALTH RISK ASSESSMENT OPERABLE UNIT 3: OFF- PROPERTY GROUNDWATER

216 Paterson Plank Road Site
Carlstadt, New Jersey

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ACRONYMS

AOC	Administrative Order on Consent
ADAF	Age-Dependent Adjustment Factor
ATSDR	Agency for Toxic Substances and Disease Registry
BRA	Baseline Risk Assessment
CDI	Chronic Daily Intake
cm/s	Centimeters Per Second
COPC	Chemicals of Potential Concern
CSF	Cancer Slope Factor
CT	Central Tendency
ELCR	Excess Lifetime Cancer Risk
EPC	Exposure Point Concentration
FS	Feasibility Study
GPM	Gallons per minute
GWQS	Groundwater Quality Standards
HEAST	Health Effects Assessment Summary Tables
HHRA	Human Health Risk Assessment
HI	Hazard Index
HQ	Hazard Quotient
IRIS	Integrated Risk Information System
NCEA	National Center for Environmental Assessment
NJDEP	New Jersey Department of Environmental Protection
NPL	National Priorities List
PCE	Tetrachloroethene
PPRTV	Provisional Peer Reviewed Toxicity Values
RAGS	Risk Assessment Guidance for Superfund
Rfc	Reference concentration
Rfd	Reference Dose
RI	Remedial Investigation
RME	Reasonable Maximum Exposure
ROD	Record of Decision
RSL	Regional Screening Level
SVOC	Semi-Volatile Organic Compound
TCE	Trichloroethene
UCL	Upper Confidence Limit
URs	Unit Risks
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound



1.0 INTRODUCTION

1.1 Background

This Baseline Human Health Risk Assessment (BRA) for Operable Unit 3 (OU-3): Off-Property Groundwater at the 216 Paterson Plank Road Site (Site) located in Carlstadt, New Jersey (see Figure 1) has been prepared by Golder Associates Inc. (Golder) on behalf of the 216 Paterson Plank Road Cooperating PRP Group (Group). The BRA was prepared pursuant to the additional work provisions of the Administrative Order on Consent (AOC) (Index No. CERCLA II-50114) for the Site dated September 30, 1985 (RI/FS Order). OU-3 addresses Site-related impacts to deep groundwater in the glacial deposits and bedrock; the groundwater in this operable unit has been the subject of extensive investigations. OU-3 is the final operable unit for the Site and follows interim measures implemented as Operable Unit 1 (OU-1), and the final remedy for soils and shallow groundwater addressed as Operable Unit 2 (OU-2).

A site-specific baseline risk assessment is required by the National Contingency Plan as part of the remedial investigation (40 CFR Section 300.430(d)(1)). The baseline risk assessment provides risk managers with an understanding of the actual and potential risks to human health posed by the site and the uncertainties associated with the assessment (USEPA, 1991a). As such, the BRA is important in establishing the basis for any remedial action proposed for a site under CERCLA.

1.2 Risk Assessment Process for Human Health

The risk assessment methods described in this report are based on USEPA's Risk Assessment Guidance for Superfund (RAGS). Application of these guidelines and policies provides a consistent process for evaluating and documenting potential human health impacts associated with environmental exposures. The risk assessment process incorporates a number of assumptions and forms of extrapolation that cannot be verified by traditional scientific means, especially with regard to carcinogenic effects. The approach is conservative (i.e. health protective) and is used by regulatory officials to place an upper bound on risk in order to ensure maximum health protection in the absence of complete experimental information. Risk assessments are not intended to provide a solid line between "safe" and "unsafe" levels of exposure, but consider the Risk Range, as defined in the National Contingency Plan (USEPA, 1990) that includes a goal of protection of one in a million (10^{-6}) to one in ten thousand (10^{-4}) for cancer risks and a hazard quotient not exceeding 1 for non-cancer health effects. A substantial margin of safety is built into toxicity values, thereby providing a high degree of certainty that the levels derived as within the Risk Range by regulatory agencies will not result in adverse health effects in a potentially exposed population. Consequently, exposures may exceed the estimated acceptable dose level without a significant increase in risk.

It must also be emphasized that the potential risks estimated using these risk assessment methods are not absolute, i.e., the risk estimates cannot be used to predict the actual number of individuals who might



experience health consequences as a result of exposure. Actual health risks are less than those estimated using the methods of risk assessment used in this report. Furthermore, the risk estimates developed herein do not relate to absolute individual risks but indicate risk to similarly exposed populations. Although current risk assessment approaches are designed to be health protective and conservative, and may overestimate risk, they provide a systematic method that allows public health policy makers to establish the relative risks posed by various environmental substances and potential exposure pathways.

This baseline human health risk assessment follows the four steps of the risk assessment process identified in the Risk Assessment Guidance for Superfund – Part A (USEPA, 1989). The four steps are:

- *Hazard Identification including Data Evaluation:* Evaluation of data usability and the selection of chemicals of potential concern (COPC).
- *Exposure Assessment:* Evaluation of actual and/or potential chemical release and transport mechanisms. This step includes an evaluation of potential exposures to the Reasonably Maximally Exposed (RME) populations under current and future land use assumptions. The exposure assessment also assumes the absence of remedial action and Institutional Controls (ICs). Estimates of RME were calculated using parameter values that simulate the highest exposures that might reasonably be expected to occur.
- *Toxicity Assessment:* Evaluation, either qualitatively or quantitatively, of the toxicity information for chemical contaminants found at the site.
- *Risk Characterization:* Evaluation of the likelihood and magnitude of adverse health effects, in the form of incremental lifetime cancer risks and non-cancer Hazard Quotients (HQs). Sources of uncertainty in the BRA are noted and discussed.

This BRA evaluated the potential for adverse health effects associated with human exposure to (deep) Site groundwater contaminants. The risk assessment was developed consistent with USEPA risk assessment guidelines, guidance, and policies and more specifically the Risk Assessment Guidance for Superfund (USEPA, 1989; 1991; 1995; 2001; 2002; 2004; 2005a; b; 2006; 2009a;b;c; 2010).

For the purposes of the analysis, the RME is defined as well above the average exposure but within the range of possibility. A separate analysis of cancer risks and non-cancer health hazards to the Central Tendency Exposed (CT) population or average exposures were developed for all chemicals exceeding the Risk Range identified under the National Contingency Plan (NCP) regulation (USEPA, 1990) that includes a goal of protection of one in a million (10^{-6}) to one in ten thousand (10^{-4}) or a HQ greater than 1.

1.3 Report Organization

Following is a summary of the report contents and organization.



The BRA consists of all relevant¹ standard RAGS Part D Tables 1 through 10 and explanatory text. The RAGS Part D tables presented herein summarize the selection of pathways and chemicals of potential concern (COPCs), the intake exposure parameters, chemical toxicity data (carcinogenic and non-carcinogenic), and estimates of potential risks from all pathways and COPCs. The methods used to formulate the tables are described in the appropriate sections:

Section 1: Introduction, provides general background information on the project and the risk assessment process.

Section 2: Site Description and History, provides a brief description of the Site history and current conditions, including the nature and extent of contamination.

Section 3: Selection of Human Receptors and Exposure Pathways, discusses exposure scenarios and assumptions for current and potential future uses of OU-3 groundwater, as summarized in Table 1.

Section 4: Occurrence, Distribution and Selection of Chemicals of Potential Concern, summarizes the results of the OU-3 groundwater investigation and the screening of chemicals against toxicity benchmark values to identify chemicals of potential concern, as presented in Table 2.

Section 5: Exposure Point Concentrations, estimates exposure pathway-specific concentrations of Site-related contaminants (using statistical analyses of data and modeling) as presented in Table 3.

Section 6: Estimated Daily Intake, estimates human intake based on chemical concentrations at the points of exposure combined with exposure variables for reasonable maximum and central tendency exposure scenarios, as presented in Table 4.

Section 7: Toxicological Assessment, presents a hazard evaluation for each selected chemical to derive toxicity values for cancer and non-cancer health effects, as presented in Tables 5 and 6.

Section 8: Human Health Risk Characterization, presents numerical estimates of carcinogenic and non-carcinogenic risks calculated for each chemical by each potential route of exposure, as presented in Tables 7 through 10.

Section 9: Uncertainty Assessment, discusses the assumptions used in the BRA and their effects on the estimated risks.

Section 10: Conclusions

¹ Tables relating to radionuclide risk estimations are not relevant and have been excluded.



Section 11: References, provides all references cited in the report.

In addition, a number of appendices to the report provide complete analytical results from the OU-3 groundwater investigations, and further details of statistical analyses, modeling, and related calculations.



2.0 SITE DESCRIPTION AND HISTORY

2.1 General Site Description

The 6-acre property is a former chemical recycling and waste processing facility, which ceased operation in 1980, and is located in a light industrial/commercial area of Carlstadt, New Jersey. The property is zoned for industrial/commercial use and is bordered to the southwest by Paterson Plank Road, to the northwest by Gotham Parkway, to the southeast by a trucking company, and to the northeast by Peach Island Creek.

2.2 Regulatory Background

The Site was placed on USEPA's National Priorities List (NPL) in 1983. USEPA issued a Record of Decision (ROD) dated September 14, 1990, selecting an interim remedy for OU-1 addressing contaminated soils and shallow groundwater. The ROD defined OU-1 as "contaminated soils and groundwater above the clay layer". The USEPA issued a further ROD dated August 12, 2002, which selected a final remedy for the soil and shallow groundwater, referred to as OU-2. The ROD defined OU-2 as the soil, sludges and groundwater above the shallow clay layer and inside the existing containment slurry wall. A Consent Decree was lodged on July 14, 2004 with an effective date of September 30, 2004, which provided for the implementation of the OU-2 remedial action by the Group. The OU-2 remedy is currently in the final stages of construction. OU-3 addresses deep groundwater extending off-property and is the final operable unit for the Site.

2.3 Site Geology

The stratigraphy at the Site consists of the following units, from youngest to oldest:

- Manmade fill (3-10 feet thick);
- Marine and marsh "meadow mat" (0-4 feet thick);
- Glaciolacustrine varved clay unit, including an upper stiff bedded unit and a lower soft plastic unit (0-20 feet thick);
- Glacial till, including a soft upper unit (0-17 feet thick) and an overconsolidated lower lodgment till (0-30 feet thick); and,
- Passaic Formation bedrock consisting of siltstones and mudstones with occasional interbeds of sandstone.

The geologic units that are relevant to OU-3 include the Glaciolacustrine Varved Unit, which serves as a confining unit, and the underlying Glacial Till and Bedrock aquifers.



2.4 Site Hydrogeology

Site investigations have included multiple rounds of continuous water level monitoring of multiple till and bedrock monitoring wells as well as monitoring of surface water levels in Peach Island Creek. Hydrogeologic testing (packer and slug) was also performed on six till monitoring wells and four bedrock monitoring wells. Relevant results from these studies (Golder, 1997; 2003) are summarized below:

- There was generally a seven-day cycle of fluctuations in water level for all till and bedrock monitoring wells. A weekly high was recorded on Mondays and lows were recorded on Fridays/Saturdays, indicating that water levels are influenced by extraction wells in the vicinity operating during the week and idling on the weekends. Groundwater observations indicate that flow direction can vary over a wide range. This variability is apparently due to anthropogenic influences in the area, coupled with the low natural hydraulic gradients. Variations in pumping rates from different pumping centers can relatively easily overcome the low natural hydraulic gradients to affect groundwater flow direction. A well survey based on New Jersey Department of Environmental Protection (NJDEP) records identified pumping wells in several locations in the vicinity of the Site, although none were located within the area of contaminated groundwater associated with the Site. One cooling water pumping well, located about 2,300 feet from the Site along strike, had a relatively high yield of 250 gallons per minute (gpm), and may induce hydraulic gradients in a northerly direction. It has been shown that drawdown from pumping wells along strike within the bedrock formation can be significant at distances of 2,400 feet (Carswell, 1976). Thus, effects could potentially occur at the Site, and in particular, at well MW-20R, which is only 1,750 feet from the pumping well.
- There was an approximate 12-hour fluctuation cycle in several of the till monitoring wells and all bedrock monitoring wells coinciding with tidal fluctuations observed in Peach Island Creek. These 12-hour fluctuations reflect tidal influences that do not appear to affect the predominant groundwater flow directions.
- Horizontal hydraulic gradients in both the till and bedrock range between approximately 0.001 ft/ft and 0.0008 ft/ft with higher gradients associated with periods when off-Site pumping was active.
- Vertical hydraulic gradients between the till and bedrock well clusters were variable; some well clusters indicated slightly upward gradients and slightly downward gradients at different times, correlated to off-Site pumping. Vertical gradients between the till and shallow bedrock ranged from 0.0005 (upward) to 0.030 (downward) when pumping was absent, and from 0.002 (downward) to 0.032 (downward) during the pumping period.
- Hydrogeologic testing indicated till hydraulic conductivities ranging from 3.2×10^{-6} centimeters per second (cm/s) at location MW-10D to 7.1×10^{-4} cm/s at location MW-16D with a geometric mean value of 7.0×10^{-5} cm/s. The bedrock hydraulic conductivities ranged from 3.1×10^{-5} cm/s at location MW-8R to 1.2×10^{-2} cm/s at location MW-11R with a geometric mean value of 4.3×10^{-4} cm/s.

2.5 Well Survey

The results of a well survey of the surrounding community were summarized in the Off Property Groundwater Investigation Report, (Golder, 2009). Well searches were requested from the NJDEP Bureau of Water Allocation to identify pumping wells and monitoring wells within 1 mile of the Site. Key conclusions from the well search are as follows:



- Fifteen pumping wells were identified within 1 mile of the Site, of which six were within 0.5 mile of the Site;
- Only one of the pumping wells, located 1 mile upgradient from the Site, was reported as used for domestic purposes;
- All of the pumping wells are bedrock wells, ranging in depth from 150 feet to 403 feet; and,
- The highest reporting pumping rate is 250 gpm for a cooling water well located at 650 Dell Road, approximately 0.5 mile downgradient from the Site.

The results of the well survey support the assumption that there are no current exposures to OU-3 groundwater impacted by the Site and that exposures assessed in this BRA are for potential *future* exposures that may arise; if bedrock/till groundwater wells are installed in the future and used for water supply purposes.

2.6 Summary of OU-3 Groundwater Investigations

The results of all previous OU-3 groundwater investigations were presented in the Final Off-Property Groundwater Investigation Report, dated July 2009. 1,4-dioxane was analyzed for in samples collected from select wells beginning in 2007², and elevated levels were observed in MW-21D and MW-22D located on the upgradient side of the Site. Additional investigations were subsequently performed to further evaluate the extent of 1,4-dioxane, and the results were reported in the OU-3 Feasibility Study Phase 1 Treatability Studies (Golder, 2011).

The data used in this BRA include all monitoring events conducted between December 2006 and December 2010. These data provide the most comprehensive information on the areal extent of groundwater impacts, and concentrations within these wells have either remained stable or decreased over time and so provide the most accurate representation of the current conditions. Given the favorable trends in groundwater concentrations over 2006-2010 this time period (Golder, 2009), the inclusion of all data collected since December 2006 is both comprehensive and conservative (i.e., health protective).

Groundwater chemistry data are presented in Appendix C wherein the data are compared to the applicable New Jersey Class IIA Groundwater Quality Standards (GWQS). Monitoring well locations are illustrated in Figure 2.

2.7 Data Usability

Data included in this risk assessment were validated according to USEPA Region II guidelines and method-specific criteria. The data were previously reported in the Final Off-Property Groundwater Report (Golder, 2009) which also included the data validation narratives. Appendix E contains a Data Usability Worksheet that confirms the data usability for purposes of this risk assessment.

² 1,4-dioxane is an emerging contaminant of concern to USEPA and samples had not previously been analyzed for this compound at the Site.



3.0 SELECTION OF HUMAN RECEPTORS AND EXPOSURE PATHWAYS

3.1 Identification of Receptors

Exposed receptors refer to groups of individuals (populations) who may be exposed, currently or in the future, to a chemical released into the environment from the Site. For this particular case, exposures exist only under potential future land use scenarios, because current exposures to the deep groundwater do not occur as groundwater impacted by the Site is not used for drinking or any other purpose; as such, current exposure pathways are incomplete (Table 1). Therefore, exposures are limited to future receptors³ that may install groundwater wells within the OU-3 deep groundwater impacted zone, including the following:

- Future Residents: The potential future use scenario for residential use of groundwater was evaluated; although residential land use is not currently permitted by local zoning.
- Future Industrial/Commercial Workers: The potential future use scenario for occupational exposures to groundwater was evaluated.

Consistent with USEPA guidance, these receptors are evaluated using both RME and CT estimates of exposure.

3.2 Identification of Exposure Pathways

Exposure pathways refer to potential routes by which receptors may be exposed to contaminants originating from the Site. Receptors can potentially be exposed to contamination through exposure to groundwater from future wells installed within the impacted OU-3 deep groundwater. Therefore, potential exposures through ingestion, direct contact, and inhalation of water vapors from household use (e.g. showering) were considered. Contaminated off-Site groundwater is overlain by non-impacted shallow groundwater, so that vapor intrusion pathways are incomplete, as documented in USEPA's Five-Year Review (USEPA, 2008a).

3.3 Summary of Receptors and Exposure Pathways

Potential future receptors that may be exposed to OU-3 groundwater include adult and child residents and adult industrial/commercial workers. Any other potential receptors (e.g., children at a day care; construction workers) would be less exposed than those already included in the BRA and therefore, receptors evaluated represent conservative (i.e., health protective) surrogates.

³ Future exposures at the 216 Paterson Plank Road property itself are also incomplete as a Deed Notice is in place, as part of the OU-2 remedy that prevents the installation of groundwater wells for any purpose other than monitoring. However, the presence of this Institutional Control is not considered in this risk assessment.



The following potential future exposure pathways were considered for residents (both children and adults):

- Ingestion of groundwater
- Dermal exposure to groundwater
- Inhalation of water vapors from household use

The following potential future exposure pathways were considered for industrial/commercial workers:

- Incidental ingestion of groundwater
- Dermal exposure to groundwater

As EPA Guidance (EPA, 1991b; 2004) does not provide parameters for the inhalation of water vapors from industrial exposure, this pathway was not evaluated quantitatively, but is addressed in Section 9.3.

Table 1 presents these potential future exposure pathways applicable to the Site in the standard RAGS Part D format.



4.0 OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN (COPC)

COPCs were selected according to the following screening procedures specified in USEPA's RAGS documents.

All OU-3 groundwater data collected since December 2006 was considered in the screening, addressing all compounds that were detected at least once. As noted in Section 2.6, given that groundwater concentrations have remained stable or declined over time due to natural attenuation, the inclusion of all data collected since December 2006 is both comprehensive and conservative (i.e., health protective). OU-3 groundwater data were screened against USEPA Regional Screening Levels (RSLs; November 2011) for tap water at a risk level of 1×10^{-6} for carcinogens or a hazard index of 0.1 for noncarcinogens. The RSL calculator (available at http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search) was used to calculate a screening value for tetrachloroethylene (PCE) as new toxicity reference values for this compound have been recently released (USEPA, 2012). In general a compound was eliminated as a COPC if its maximum detection was below the screening value, and it was retained if its maximum detection was above the screening value. Consistent with USEPA policy, Group A carcinogens that were detected (arsenic, benzene, and vinyl chloride) were retained as COPCs irrespective of concentration.

Chromium data for the OU-3 groundwater are for total chromium only. To be health-protective, these total chromium data were screened using the RSL for tap water for hexavalent chromium (chromium^{+6}). Section 5 describes how chromium^{+6} and trivalent chromium (chromium^{+3}) were evaluated moving forward through the risk assessment process.

Lead data was screened using EPA's Lead and Copper Rule (EPA, 1991) which established an action level of 15 ug/L based on the 90th percentile level of samples. Lead was detected once in 19 samples above the action level at a concentration of 48.6 ug/L in MW-13D in 2009 (results ranged from non-detect to 48.6 ug/L with a mean value of 5.4 ug/L). A subsequent sample in 2010 from MW-13D detected lead at 8.5 ug/L and the 90th percentile level of all of the OU-3 data is also below the action level and therefore, lead was not retained as a COPC.

Compounds considered essential nutrients (e.g. calcium) were also not retained as COPCs. The screening process is detailed in Table 2 and well locations are shown in Figure 2.

4.1 Groundwater Screening Results

A total of 39 volatile organic compounds (VOCs), six semi-volatile organic compounds (SVOCs), three pesticides, and 21 inorganic compounds were detected in OU-3 groundwater, and the following 20 VOCs, one SVOC, and 11 inorganics were retained as COPCs (see also Table 2):



Volatile Organics	Semi-Volatile Organics	Inorganics
1,1,2-Trichloroethane	Bis(2-Ethylhexyl)Phthalate	Aluminum
1,1-Dichloroethane		Antimony
1,1-Dichloroethene		Arsenic
1,2,4-Trichlorobenzene		Cadmium
1,2-Dichloroethane		Chromium
1,2-Dichloropropane		Cobalt
1,4-Dioxane		Iron
Acetone		Manganese
Benzene		Mercury
Bromodichloromethane		Vanadium
Chlorobenzene		
Chloroform		
cis-1,2-Dichloroethene		
Dibromochloromethane		
Ethylbenzene		
Methyl Cyclohexane		
Methylene Chloride		
Tetrachloroethene		
Trichloroethene		
Vinyl Chloride		



5.0 EXPOSURE POINT CONCENTRATIONS

RAGS Part D Table 3 was prepared for each of the COPCs identified in the screening process. Table 3 summarizes the distribution of measured concentrations by reporting the arithmetic mean of the concentrations, the 95% upper confidence limit on the mean (95% UCL), and the maximum detected concentration for each COPC.

The mean and 95% UCL were calculated from the data used to compile Table 2. One-half the detection limit was used for non-detect results and the 95% UCL was calculated using USEPA's proUCL (version 4.1) software package; the reported values are based on the statistical distributions recommended by the program. ProUCL output sheets are included in Appendix D.

The 95% UCL was generally chosen as the exposure point concentration (EPC) presented in Table 3 for the Reasonable Maximum Exposure (RME) calculations. For mercury, the 95% UCL was calculated to be greater than the maximum detected observation, therefore the maximum detected value was used as the EPC. Calculations of potential vapor concentrations are provided in Appendix B and are described in Section 6.3.

In the case of chromium, only total chromium data are available whereas chromium can exist in two forms (hexavalent and trivalent) that have different toxicities. Published data (Palmer & Puls, 1994) indicates that chromium⁺⁶ does not generally persist in groundwater and the documented site groundwater conditions (reducing conditions with neutral pH) indicate that chromium⁺⁶ would not be expected to be present (Appelo & Postma, 1993). Site-specific measurements of pH and ORP for the wells with chromium detections ranged as follows:

- For pH, the range was 6.67 to 10.53. Only one value (6.67 at RMW-13D) was below 7, so the site groundwater pH is clearly neutral or basic.
- ORP data ranged from 63 to -164. Only one value (63 at RMW-12D) was not a negative (reducing) value.
- At the well with the highest chromium detection, MW-5D, the pH was 7.88 (basic) and the ORP was -127 (reducing).

Therefore, chromium +6 would not be expected at the site. California EPA adopted a ratio of chromium⁺⁶ to total chromium of 7.2% in groundwater based on field studies (CalEPA, 1999). In this assessment, a ratio of 7.2% has been applied to calculate equivalent concentrations of chromium⁺⁶ from the total chromium data. The remainder of the total chromium concentrations was evaluated as chromium⁺³.

Consistent with USEPA policy, risk estimates based on CT exposures used the same EPC (95% UCL) as the RME scenarios.



6.0 ESTIMATED DAILY INTAKE

The estimated human exposure, or intake, received through the ingestion and dermal exposure pathways was calculated as a Chronic Daily Intake (CDI), which is expressed in terms of mass of the COPC taken into the body per unit of body weight per unit of time (usually expressed in units of mg/kg/day). The CDI for each receptor and exposure pathway is a function of the EPC, contact rate (e.g., ingestion rate), exposure frequency and duration, body weight, and averaging time. Some of these variables are comparable for all situations and so standard values were used, while others are dependent on the characteristics of the Site and the potentially exposed populations, as further discussed below.

Consistent with RAGS Part F (USEPA, 2009) and the USEPA 1994 *Inhalation Dosimetry Methodology*, inhalation exposures were calculated by determining an exposure concentration (EC) of a COPC in air to which a receptor is exposed. The EC is a measured or modeled time-weighted average over a 24-hour period accounting for the prescribed exposure duration (e.g., 1 hour per day).

The parameters needed to calculate the CDI/EC for each receptor (including adults and children) and exposure route are summarized in RAGS Part D Table 4 format for the exposure scenarios identified in Table 1. Separate tables are provided that represent RME and CT scenarios. Calculations based on CT variables are included in the risk assessment to assist in making risk management decisions for pathways that exceed risk ranges based on the RME analyses. Exposure variables are taken from USEPA guidance documents, where available. Professional judgment was used for those variables with no standard or readily available values (e.g., industrial/commercial dermal contact with groundwater). The rationale/sources of the values presented are identified in Tables 4.1 through 4.3.

The body weight of an adult was assumed to be 70 kg, while the weight of a child was estimated to be 15 kg under the RME scenario and CT scenario (USEPA, 2002). The averaging time for non-carcinogenic effects for all pathways was set equal to the exposure duration. For carcinogenic effects, the ELCR was calculated using a lifetime of 70 years (25,550 days) for both RME and CT conditions.

6.1 Residents

Adult residents are assumed to spend 350 days of the year, for 30 years, at the residence for the RME scenario (USEPA, 1991b), and 350 days per year for 9 years in the CT scenario. A skin surface area of 18,000 cm² for adult contact with groundwater (USEPA, 2004) was assumed for exposure while showering, with an associated duration of 0.25 hours/day (RME scenario) or 0.1 hours/day (CT scenario). A tap water ingestion rate of 2 L/day for the RME scenario and 1 L/day for the CT scenario was assumed (USEPA, 1991b).

Child residents are assumed to spend 350 days of the year, for 6 years, at the residence (USEPA, 1991b). A skin surface area of 6,600 cm² for child contact with groundwater (USEPA, 2004) was



assumed for exposure while bathing for a duration of 0.45 hours/day (RME scenario) or 0.14 hours/day (CT scenario). A tap water ingestion rate of 1 L/day for the RME scenario and 0.5 L/day for the CT scenario was assumed (USEPA, 1991b).

6.2 Industrial/Commercial Workers

Industrial/commercial workers were assumed to be adult, exposed for 8 hours per day, 250 days per year for a career spanning 25 years (RME scenario) (USEPA 2002) and exposed for 8 hours per day, 250 days per year for a career spanning 7.2 years (CT scenario).

Dermal exposure to groundwater for adult industrial/commercial workers may occur through washing of hands and forearms for an assumed duration of 0.5 hours per day. The skin surface area exposed is assumed to be 2,830 cm² based on the 95th percentile of reported skin surface area for these body parts (USEPA, 1997a). An ingestion rate of 1 L/day was used for industrial/commercial workers for the RME scenario and 0.5 L/day for the CT scenario (50% of the tap water intake under the residential CT scenario).

Although industrial/commercial use of tap water may include some additional exposures from showering, based on the results for the residential receptor, this pathway is considered *de minimis* for an industrial/commercial worker (i.e., inhalation and dermal risks do not drive the residential risks). Exposures to an industrial/commercial worker would be less than a residential scenario, therefore, it can be assumed that this pathway is a *de minimis* pathway for the industrial/commercial worker as well. The additional exposures for this receptor via a showering scenario are addressed further in the Uncertainty Section (Section 9).

6.3 Showering/Bathing Exposure

In order to evaluate potential inhalation risks from groundwater, a shower model was used to derive vapor phase concentrations for volatile organic compounds (VOCs) that are COPCs at the Site. The BRA evaluates inhalation exposure due to showering (adult resident) or bathing (child resident). The equations used to derive the vapor phase concentrations were as follows (Andelman, 1990; Schaum *et al.*, 1994):

$$C_{(aMAX)} = C_{(w)} * f * F_{(w)} * t1 / V_{(a)} \quad (1)$$

$$C_{(a)} = [(C_{(aMAX)} / 2) * t1 + C_{(aMAX)} * t2] / (t1 + t2) \quad (2)$$

Where:

- $C_{(a)}$ = concentration of volatile chemical contaminant in air (mg/m³);
 $C_{(aMAX)}$ = maximum air concentration in bathroom (mg/m³);
 $C_{(w)}$ = water concentration (mg/l);
 f = fraction volatilized (unitless; calculated, Schaum *et al.*, 1994, Table B-3);
 $F_{(w)}$ = water flow rate;
 $V_{(a)}$ = bathroom volume;



t1 = time spent in shower/bath (hr); and,
t2 = time spent in bathroom following shower/bath.

This shower model was used to provide a health protective estimate of vapor phase concentrations in both the shower and bathing exposure scenarios. Values used for each of the above parameters are provided in Appendix B together with the calculated vapor phase concentrations. As noted by Schaum, et al. (1994) "the assumptions of constant volatilization and no ventilation tend to make this model very conservative, that is, it is likely to overestimate actual levels." Additional assumptions made by this model include the following:

- The concentration of the chemical contaminant in air is assumed to be zero at the start of the shower;
- The exchange between air in the shower stall and bathroom air is so rapid that the combined volume of the two compartments can be treated as a single chamber with a single concentration of volatilized chemical;
- The model does not account for the exchange rate that occurs when an exhaust fan is turned on; and,
- The RME scenario is assumed to correspond to the smallest reported average volume of bathroom space; and the CT scenario to the midrange as reported by Schaum et al. (1994).



7.0 TOXICOLOGICAL ASSESSMENT

7.1 Introduction

Relevant toxicological literature detailing the adverse effects in humans or laboratory animals resulting from chemical exposures under various dosing regimens is used to quantitatively evaluate the potential health risks associated with environmental exposures to chemicals. USEPA has conducted such assessments on many frequently occurring environmental chemicals and has developed standardized toxicity values for use in risk assessment for these compounds. USEPA calculates reference doses (RfDs) and reference concentrations (RfCs) for assessment of non-carcinogenic effects, and cancer slope factors (CSFs) and unit risks (URs) for effects from known, suspected, or possible human carcinogens. Adopted toxicity values are provided in USEPA's on-line database, the Integrated Risk Information System (IRIS). For chemicals not included in IRIS, USEPA's Provisional Peer Reviewed Toxicity Values (PPRTV), and other sources including California EPA (CalEPA), the Agency for Toxic Substances and Disease Registry (ATSDR) and Health Effects Assessment Summary Table(s) (HEAST) are available. A recent effort to harmonize risk assessment and toxicity values within USEPA has lead to the incorporation of toxicity data and screening values into one source, the Regional Screening Levels for Chemical Contaminants at Superfund Sites (USEPA, 2011a). The most recent version of the RSL database (November 2011), was used as a source for toxicity values not available in IRIS.⁴

The USEPA has indicated that RfDs and RfCs are based on the assumption that thresholds exist for certain toxic effects and that they often have an uncertainty spanning perhaps an order of magnitude. Chronic RfDs and RfCs were specifically developed to be protective of long-term exposure to a chemical. The evaluation of the potential for non-cancer (e.g., systemic) effects from exposure to non-carcinogens is based on the use of RfDs, in units of mg/kg-day for oral and dermal exposures and units of mg/m³ for RfCs for inhalation exposures. These toxicity criteria are estimates of daily exposure to the population (including sensitive subpopulations) that are likely to be without appreciable risk of deleterious effects for the defined exposure period, subchronic or chronic. In general, the RfD and RfC are calculated by dividing the no adverse effect level (NOAEL) or lowest observed adverse effect level (LOAEL) derived from animal or human studies by an uncertainty and/or modifying factor. RfDs and RfCs incorporate an uncertainty factor that serves as a conservative downward adjustment of the numerical value and reflect scientific judgment regarding the data used to estimate the RfD/RfC.

To evaluate the carcinogenic potential of a chemical, USEPA uses a two-part analysis; the first step, called a Weight-of-Evidence assessment, is to determine the likelihood that the substance is a human carcinogen. The USEPA Cancer Guidelines (USEPA, 2005a) emphasize the value of understanding the

⁴ The selection of toxicity values was conducted consistent with USEPA's Toxicity Hierarchy available at http://www.epa.gov/oswer/riskassessment/superfund_toxicity.htm



biological changes that the chemical can cause and how these changes might lead to the development of cancer. They also discuss methods to evaluate and use such information, including information about an agent's postulated *mode of action*, or the series of steps and processes that lead to cancer formation. Mode-of-action data, when available and of sufficient quality, may be useful in drawing conclusions about the potency of an agent, its potential effects at low doses, whether findings in animals are relevant to humans, and which populations or life stages may be particularly susceptible. In the absence of mode-of-action information, default options are available to allow the risk assessment to proceed.

USEPA's 1986 Cancer Guidelines recommend that an agent's human carcinogenic potential be described in a *weight-of-evidence narrative* rather than the previously identified letter categories (A = known; B = probable, C = possible, D = not classifiable, and E = non-human carcinogen). The narrative summarizes the full range of available evidence and describes any conditions associated with conclusions about an agent's hazard potential. For example, the narrative may explain that an agent appears to be carcinogenic by some routes of exposure but not others (e.g., by inhalation but not ingestion). Similarly, a hazard may be attributed to exposures during sensitive life stages of development but not at other times. The narrative also summarizes uncertainties and key default options that have been invoked.

The following are the five recommended standard hazard descriptors from the 2005 Cancer Guidelines:

- Carcinogenic to humans
- Likely to be carcinogenic to humans
- Suggestive evidence of carcinogenic potential
- Not classifiable as to its carcinogenic potential
- Not likely to be carcinogenic to humans

USEPA employs both the 1986 and 2005 Cancer Guidelines to evaluate the carcinogenic weight of evidence of chemicals through the IRIS chemical process. In the IRIS process, chemicals are nominated, all chemicals are evaluated consistent with both the 1986 and 2005 Guidelines, and narratives are developed describing the Weight-of-Evidence. The IRIS chemical file is then reviewed through internal Agency consensus review and external peer-review. The requirements for in-depth analysis of "mode-of-action data" and the review process does not allow the equating of a chemical evaluated under the old system with the letter classification with the 2005 Classification narrative; rather, a full analysis of the data is required.

USEPA's 2005 Cancer Guidelines also include Supplemental Guidance on the evaluation of early lifetime exposures. For example, where data are available on mutagenic mode of action for carcinogenesis, the Supplemental guidance provides procedures for evaluating chemicals that are carcinogens and either using the data in the development of the potency factors or using age dependent adjustment factors. The



Supplemental Guidance also provides for the evaluation of data on early lifetime exposures where children may be more susceptible.

The second step of the USEPA two-step process for assessing potential carcinogenic risks is to quantify the relationship between the dose of a compound and the response it invokes. This leads to the calculation of a CSF for those compounds that are or may be human carcinogens. A CSF represents the 95 percent upper confidence limit on the linear component of the slope of the dose-response curve in the low-dose (low-risk) portion of the curve. The corresponding carcinogenic toxicity value for the inhalation pathway is the unit risk factor (UR).

7.2 Toxicity Values for Chemicals Evaluated in the Risk Assessment

Tables 5 and 6 present non-cancer and cancer toxicity data, respectively, in RAGS Part D standard table format for chemicals retained as COPCs. Toxicity data were gathered from the USEPA's IRIS as the primary source. Where IRIS values were unavailable, the RSL table (November 2011) was used as a secondary source. In all cases, the source of the toxicity data cited is identified in the Tables. Where both chronic and subchronic non-cancer toxicity data were available, the chronic value was used. Similarly, where toxicity varies according to the chemical species (e.g., hexavalent vs. trivalent chromium) the appropriate value was used.

7.3 Evaluation of Mutagenic COPCs for Child Receptor

For this BRA, cancer risks from COPCs associated with a mutagenic mode of action (chromium⁺⁶, trichloroethene, and vinyl chloride) were calculated by applying an age-dependent adjustment factor (ADAF) for certain ages of the exposure period. These factors are applied in response to USEPA's determination that early-life exposures to mutagenic carcinogens may result in higher than typically expected incidences of cancer (USEPA, 2005b) and are considered health protective and consistent with USEPA guidance for the development of the RSLs (USEPA, 2011a; b).

For vinyl chloride, a default ADAF of 2 was applied for the calculation of cancer risk from 0 to 6 years.

For chromium⁺⁶ and trichloroethene, default ADAFs for different ranges in age were applied. For children ages 0 to 2 years, the default ADAF is 10 and for children ages 2 to 6 years, the default ADAF is 3. The cancer risk calculations and equations for the mutagenic COPCs are provided in Tables 7.2 RME/CT MUT.



8.0 HUMAN HEALTH RISK CHARACTERIZATION

8.1 Introduction

In accordance with USEPA guidance, potential ELCRs are estimated by multiplying the CDI/EC value by the chemical-specific CSF/UR. Estimated or potential cancer risks associated with different exposure routes are summed for a given receptor. USEPA's risk range is a cumulative ELCR of between 1×10^{-6} and 1×10^{-4} (one in a million to one in ten thousand). An ELCR from exposure to Site-related chemicals that is greater than 1×10^{-6} is regarded as a point of departure requiring consideration of possible remedial options in a Feasibility Study.

Potential non-cancer risks are estimated by calculating hazard quotients (HQ) for each chemical. A hazard quotient is the CDI/EC value divided by the chemical-specific RfD/RfC. Potential non-cancer hazards from Site-related chemicals of less than 1.0 are considered protective. When receptors may be exposed to multiple COPCs, the chemical-specific HQs are added together to yield a hazard index (HI). As recommended by USEPA RAGS, when the overall HI is greater than 1, the organ-specific HI is calculated. For this calculation, each HQ for each COPC is separated by target organ or organ system (e.g., liver effects) and then these HQs are summed to determine the target organ specific HI. As with the overall HI, when the target organ specific HI is less than 1, the risks are within the goal of protection for those COPCs. When the target organ specific HI is greater than 1, additional evaluation and/or remediation may be recommended.

8.2 Quantitative Risk Estimation Methodology

8.2.1 Cancer Risk Estimation

Cancer risks are quantified by the product of the CDI (see Section 6) and the CSF (see Section 7) for a given receptor-chemical-pathway combination as shown in Equations 8-1 (ingestion and dermal contact) and 8-2 (inhalation).

$$ELCR = CDI \times CSF \quad (8-1)$$

$$ELCR = EC \times UF \quad (8-2)$$

where,

ELCR	=	Excess Lifetime Cancer Risk
CDI	=	Chronic Daily Intake, mg/kg/day
CSF	=	Cancer Slope Factor, (mg/kg/day) ⁻¹
EC	=	Exposure Concentration, ug/m ³
UF	=	Unit Risk Factor (ug/m ³) ⁻¹



8.2.2 Non-Cancer Risk Estimation

Non-cancer risks are quantified by the quotient of the CDI (see Section 6) and the RfD (see Section 7) for a given receptor-chemical-pathway combination as shown in Equation 8-3 (ingestion and dermal contact) and 8-4 (inhalation).

$$HQ = \frac{CDI}{RfD} \quad (8-3)$$

$$HQ = \frac{EC}{RfC} \quad (8-4)$$

where,

HQ	=	Hazard Quotient, unitless
CDI	=	Chronic Daily Intake, mg/kg/day
RfD	=	Reference Dose, mg/kg/day
EC	=	Exposure Concentration, ug/m ³
RfC	=	Reference Concentration, ug/m ³

8.3 Quantitative Risk Estimates

The sum of cancer risks and hazard indices for both RME and CT scenarios are summarized in Tables 9.1 through 9.3 and overall risk summaries are provided in Tables 10.1 through 10.3.

8.3.1 Residents

Tables 7.1 and 7.2 present the potential future risks to residents exposed to OU-3 groundwater including both ELCRs and HIs for adults and children.

Under potential future exposure conditions, the sum of all estimated RME cancer risks for the adult resident is 3×10^{-3} . The primary source of the estimated cancer risk is due to ingestion (98%) of impacted groundwater. Ingestion of 1,4-dioxane (77%) and trichloroethene (TCE) (13%) contribute the majority of the overall risks. The total estimated adult cancer risk under CT conditions is 4×10^{-4} .

The sum of all estimated RME cancer risks for the child resident is 2×10^{-3} . Estimated cancer risk is due primarily to ingestion (95%). Ingestion of 1,4-dioxane (45%) and TCE (41%) contribute the highest percentage of the overall risk. The total estimated child cancer risk under CT conditions is 1×10^{-3} .

For adult resident receptors, the total estimated HI is 54 under RME conditions (25 under CT conditions) and is driven primarily by the ingestion of 1,4-dioxane, TCE and cis-1,2-dichloroethene in groundwater. As the overall HI is greater than 1 for both conditions (RME and CT), the target organ specific HQs are provided. Under both conditions, the following target organ specific HQs are above 1; liver, blood, kidney, thyroid, and heart.



For the child resident receptors, the total estimated hazard index is 125 under RME conditions (63 under CT conditions) and is driven primarily by the ingestion of 1,4-dioxane, cis-1,2-dichloroethene, TCE and PCE in groundwater. As the overall HI is greater than 1 for both conditions (RME and CT), the target organ specific HQs are provided. Under both conditions, the following target organ specific HQs are above 1; liver, blood, central nervous system (CNS) effect, kidney, thyroid, and heart.

8.3.2 Industrial/Commercial Workers

Table 7.3 presents the potential future risks to industrial/commercial workers including both ELCR and HI estimates.

Under potential future exposure conditions, the sum of all RME cancer risks for the adult industrial/commercial worker is 9×10^{-4} . Estimated risks are primarily driven by ingestion of groundwater (99%). The majority of the cancer risk is from potential exposure to 1,4-dioxane (78%) and TCE (13%). The total estimated cancer risk under CT conditions is 4×10^{-4} .

The total estimated hazard index for industrial/commercial workers is 19 under RME conditions (10 under CT conditions) and is driven by the ingestion of TCE. As the overall HI is greater than 1 for both conditions (RME and CT), the target organ specific HQs are provided. Under both conditions, the following target organ specific HQs are above 1; blood, kidney, thyroid, and heart.



9.0 UNCERTAINTY ASSESSMENT

A number of assumptions need to be made in any assessment of risk. These assumptions lead to uncertainties in the results of the assessment. Some uncertainties may result in an underestimation of potential risk, while others contribute to an overestimation of potential risk. There are five general categories of uncertainty that are introduced in the risk assessment process:

- Environmental sampling and laboratory measurement uncertainties;
- Mathematical fate and transport modeling uncertainties;
- Receptor exposure assessment uncertainties;
- Toxicological assessment uncertainties; and,
- Risk characterization uncertainties.

9.1 Environmental Sampling and Laboratory Measurement Uncertainties

Environmental sampling uncertainties are introduced by the field sampling program. The locations of samples collected as well as the sampling methodology can introduce errors or uncertainties in the estimation of EPC. If the sampling program targets areas of high concentration the overall exposure of the population at the Site can be overestimated, while ignoring these areas will likely underestimate the exposure. For example, the 95% UCL EPC used for TCE in OU-3 groundwater (735 ug/L) is biased high due to elevated maximum concentrations in one monitoring well (MW-5D). The other wells in the OU-3 investigation area did not have detections within an order of magnitude of MW-5D and were also all below the EPC (95th UCL). MW-5D is located within the property boundary and may not best represent groundwater that is migrating off-Site; for example, MW-13R, located outside the property boundary but proximate to MW-5D, has significantly lower concentrations of TCE (maximum of 230 ug/L). Overall, TCE was detected in 42 of 72 samples with a minimum concentration of 0.12 ug/L and a maximum concentration of 3,200 ug/L. The arithmetic mean of the TCE detections was 281 ug/L while the median was 0.97 ug/L. This distribution suggests that the EPC used may result in an overestimate of the potential risks from TCE.

As noted in Section 5.0, speciated chromium data were not measured. While Site geochemical data indicate that only reduced chromium⁺³ species would be present, there is an uncertainty in the chromium risk estimates because of the differences in toxicity between chromium species that may result in an over or under estimate of risk. In this context, it is noted that the EPC for total chromium (95% UCL) was 77 ug/L, which is less than the federal maximum contaminant limit (MCL) of 100 ug/L.

Laboratory uncertainties include both random and systematic errors which affect the precision and accuracy of the sample results. Data validation was conducted to evaluate the data quality in order to reduce the uncertainties involved with laboratory measurement of COPCs in environmental samples. Only data that were determined to be valid were utilized in this risk assessment.



9.2 Mathematical Fate and Transport Modeling Uncertainties

The only fate and transport modeling analysis performed during this risk assessment was that required to relate the groundwater RME to the vapor-phase RME for the shower exposure scenario. The model used was the Andelman (1990) model, as modified by Shaum et al. (1994). Parameters used in this model were chosen to be health protective of vapor phase concentrations in both showering and bathing exposure scenarios and may result in an overestimate of risks. Specifically, as noted by Schaum, et al. (1994) "the assumptions of constant volatilization and no ventilation tend to make this model very conservative, that is, it is likely to overestimate actual levels." For the RME scenario, the overestimation of concentrations of COPCs was compounded by using upper end estimates for input variables in the calculations. For example, the highest water flow rate and most health protective bathroom volume (i.e., smallest) were used (see Appendix B for input parameters).

9.3 Receptor Exposure Assessment Uncertainties

In almost all risk assessments, a variety of assumptions must be made to estimate the potential human exposure to COPCs. The calculations of daily intakes involve parameters such as ingestion and inhalation rates, which are not necessarily constant values that apply to the entire population exposed to the contaminated media. In order to protectively estimate potential risks, USEPA recommends conducting risk assessments using reasonable maximum exposure variables for most parameters. This approach is used to intentionally provide estimates of the maximum risks that are reasonably expected to occur at the Site. However, combining multiple parameters that may be applicable to higher percentiles, such as the 90th and 95th percentile level, results in overall exposure estimates that may reflect higher percentiles (as high as the 99th percentile). The goal of evaluating the RME receptor population is to protect the highest exposures that are reasonably expected to occur at a site. It is important to also consider more reasonable exposure variables when assessing risk, such as those represented by the CT estimates. The individual uncertainties involved with each exposure pathway are discussed in further detail below. Parameters common to multiple pathways, such as exposure duration and frequency, introduce uncertainty but are standard USEPA values and have a greater level of certainty than some of the pathway-specific parameters.

Ingestion of Groundwater

The groundwater ingestion rate is the parameter that introduces the most uncertainty in the groundwater ingestion pathway and, as indicated in Section 8, is associated with the highest contribution to the overall risk estimates. It was assumed in this BRA that an adult would consume 1 (CT) to 2 L/day (RME) of contaminated groundwater daily for 9 (CT) to 30 (RME) years and that a child would consume 0.5 (CT) to 1 (RME) L/day daily for 6 years. These values were either standard USEPA values (RME) or taken from USEPA sources (CT) and are intended to avoid underestimation of the groundwater ingestion risks. Furthermore, as few individuals take the entirety of their fluid intake from their residential tap water, and



purchased beverages (such as bottled/filtered water, carbonated beverages, milk, and juice) are unlikely to contain Site COPCs, the assumed intake values may lead to an over estimation of risk.

Dermal Contact with Groundwater

The dermal contact with groundwater pathway introduces a significant number of uncertainties as discussed in RAGS Part E (USEPA, 2004). The main uncertainties arise from the values used for skin surface area available for contact and the permeability coefficient.

The skin surface area available for contact for adult and child residents assumes that the total body surface area is exposed while bathing and the 50th percentile values were recommended, so the uncertainty associated with the exposed skin surface area is not anticipated to be very significant. The permeability coefficients for many of the compounds are predicted values that are subject to uncertainty. The model used to predict the permeability coefficient may underestimate the values for halogenated compounds and could lead to underestimation of risk for these compounds.

Although an industrial/commercial worker may shower at a facility, there are no recommended parameters to evaluate industrial/commercial shower exposures (USEPA, 1997a, 2004, and 2011c). Assuming only limited dermal contact with tap water (e.g., hand washing) in this BRA may underestimate potential risks from the dermal pathway. However, the dermal pathway for the residential exposure scenario, is driven primarily by ingestion risks, with the exception of noncancer risks to TCE (Table 7.1 RME). It is assumed that any parameters identified for evaluating an industrial/commercial showering pathway would be lower than the residential parameters included in this BRA and not including this pathway will not result in any significant underestimate of potential risks.

Inhalation of Volatile Compounds in Groundwater

The inhalation of groundwater through household use (most often represented as vapors while showering) introduces two main uncertainties: the modeled values for the air concentration, discussed previously, and the length of time spent in the bathroom while showering and afterwards. The exposure time for the adult and child receptors are from USEPA sources and assume a significant time spent in the bathroom following a shower with no ventilation (e.g., doors, fans, windows). Evaluation of this exposure pathway as a closed system likely overestimates the risk via this exposure pathway. Overall, the inhalation pathway for OU-3 groundwater is considered a *de minimis* pathway; that is, the risks for the inhalation pathway are below the risk range and do not significantly contribute to the overall risks, which are driven primarily by ingestion and dermal contact. For the same reason, while industrial/commercial workers may be exposed through the inhalation route during showering, the frequency and duration of exposure will be less than for a resident and so the contribution to risk is also considered *de minimis*.



Application of ADAF Values to Evaluation of Mutagenic COPCs

The application of ADAF values to address concerns regarding a mutagenic mode of action (MOA) for carcinogenicity of certain COPCs is protective, yet uncertain. The database for evaluating early life susceptibility to mutagens is limited. The default ADAF values recommended by USEPA and used in this BRA are based on repeated exposure studies, however, few of the chemicals evaluated for mutagenic MOA have data from a repeated exposure study design (TCE, chromium). When these data become available, a more chemical-specific ADAF can be determined in place of default ADAFs when mutagenicity is suspected. An example of this is the approach for vinyl chloride, which has a more compound specific ADAF of 2 for ages 0 to 16 years based on empirical data.

The default ADAFs are also based on animal studies in which the laboratory doses were much higher than those typically associated with environmental exposures. The actual mutagenicity at lower doses may be much less as DNA repair mechanisms may overcome a mutagenic MOA at lower exposure levels. It is likely that the application of default ADAFs to the risks calculated for early life exposure to TCE and chromium⁺⁶ overestimates the risks.

9.4 Toxicological Assessment Uncertainties

Uncertainty and/or modifying factors are routinely applied to toxicity values to account for interspecies variation, protection of susceptible populations, and other differences between the toxicity study and the target use of the toxicity value. These uncertainties in the toxicological values can lead to over or underestimation of risk. Uncertainties specific to risk-driving COPCs in this assessment are discussed below.

The toxicity factors associated with 1,4-dioxane were recently uploaded to USEPA's IRIS database (August 2010). The Toxicological Review was previously peer reviewed and made available for public review. Comments received during the peer review and the public review process were addressed in the final Toxicological Review for the chemical. At the present time, EPA is evaluating inhalation data to determine whether toxicity values can be developed.

The toxicity factors used in this BRA for chromium⁺⁶ may also overestimate risk. Chromium was evaluated assuming it occurs at least in some part in its hexavalent. Based on the site-specific groundwater quality parameters, it is unlikely that a significant portion of total chromium in groundwater would be chromium⁺⁶ as there is a tendency for chromium⁺⁶ to convert to chromium⁺³ in environmental media (Palmer and Puls, 1994). Carcinogenic risks from chromium⁺⁶ are therefore likely significantly overestimated.

It is also assumed that COPCs affect the body in the same way whether they are ingested or are absorbed through dermal contact. Many laboratory animal toxicity studies include oral administration of



compounds only. The ingestion toxicity values are then used for both oral and dermal exposure scenarios, when in, fact, the effect of the COPC may vary depending upon how it is absorbed into the body. This assumption may lead to an over or underestimation of risk estimates for dermal pathways. Previous risk assessment practice included a modifying factor when extrapolating dermal exposures using oral toxicity factors to account for gastrointestinal absorption. However, the current RSL table recommends using a factor of 1 for most chemicals when the data indicate a modifying factor between 1 and 0.5. This may overestimate risks from the dermal pathway from chemicals with a value less than 1, but greater than 0.5, including most organic compounds evaluated in this risk assessment. According to USEPA RAGS Part E (2004), this cutoff level obviates the need to make comparatively small adjustments in the toxicity value that may not be supported in the scientific literature. The approach employed in this BRA is consistent with RAGS Part E and available toxicity information.

Some COPCs in this assessment do not have USEPA-approved toxicity values for human health risk assessment (e.g., methyl cyclohexane). As such, quantitative risk estimates could not be performed when toxicity values were not available. This may underestimate the total potential risk. The main pathway affected by a lack of toxicity data was the inhalation pathway.

9.5 Risk Characterization Uncertainties

In the risk characterization for the Site, it was assumed that the potential adverse effects of the various COPCs are independent of one another and that the effects are additive which is consistent with EPA's Chemical Mixtures Guidelines (USEPA, 1986; USEPA, 2000). However, it is possible that the combined effect of the various chemicals may be less than or greater than the sum of the individual effects (i.e., antagonistic or synergistic effects are possible). Therefore, by assuming that the risks are additive, the actual potential risks may either be over or underestimated.

In addition, when multiple target organs were listed for a COPC in IRIS, it was assumed that the COPC affects each target organ equally. However, it is more realistic to anticipate that the COPC doses required to cause adverse effects on the various organs would vary. Because toxicity values are intentionally chosen to be health protective, the HIs shown in Tables 9 and 10 for the target organs may overestimate the actual risk posed to some of those organs.



10.0 CONCLUSIONS

Risks from potential future residential or industrial/commercial exposures to OU-3 groundwater were evaluated in a baseline human health risk assessment using standard USEPA exposure pathways and inputs. Receptors included in the BRA were adult and child residents and adult industrial/commercial workers. The data were screened using risk-based concentrations for tap water and this process identified a number of COPCs to be included in the quantitative risk estimates. Based on the risks calculated for the identified receptors, potential risks above the USEPA cancer risk range of 1×10^{-6} to 1×10^{-4} and the non-cancer goal of protection of a hazard index equal to 1 were identified for residential and industrial/commercial tap water use of the OU-3 deep groundwater aquifer for all receptors evaluated under both RME and CT scenario. The highest overall contributions to the calculated risk estimates for cancer and non-cancer risks were from exposure to 1,4-dioxane and TCE.



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TABLE 1
SELECTION OF EXPOSURE PATHWAYS
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe	Medium	Exposure Medium	Exposure Points	Receptor Population	Receptor Age	Exposure Route	On-Site/Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Bedrock/Till Groundwater	Groundwater	Groundwater	Trespassers	Adolescent	Ingestion Dermal	On-Site	None	Currently no water supply wells in bedrock/till groundwater and access to deep groundwater is incomplete for all receptors. Site is not currently active for industrial/commercial purposes and is fenced with limited access for trespassers.
Future	Bedrock/Till Groundwater	Tap Water	Tap Water	Resident	Adult	Ingestion Dermal	On-Site/Off-Site	Quant	Currently no water supply wells in bedrock/till groundwater; future scenario only
					Child	Ingestion Dermal	On-Site/Off-Site	Quant	Currently no water supply wells in bedrock/till groundwater; future scenario only
	Bedrock/Till Groundwater	Tap Water	Water Vapor at Showerhead	Resident	Adult	Inhalation	On-Site/Off-Site	Quant	Currently no water supply wells in bedrock/till groundwater; future scenario only
					Child	Inhalation	On-Site/Off-Site	Quant	Currently no water supply wells in bedrock/till groundwater; future scenario only
	Bedrock/Till Groundwater	Soil Vapor	Indoor Air	Resident	Adult	Inhalation	On-Site/Off-Site	Qual	Vapor intrusion unlikely; deep bedrock groundwater is separated from surface by confining unit and shallow aquifer.
					Child	Inhalation	On-Site/Off-Site	Qual	Vapor intrusion unlikely; deep bedrock groundwater is separated from surface by confining unit and shallow aquifer.
	Bedrock/Till Groundwater	Tap Water	Tap Water	Industrial/Commercial Worker	Adult	Ingestion Dermal	On-Site/Off-Site	Quant	Currently no water supply wells in bedrock/till groundwater; future scenario only
	Bedrock/Till Groundwater	Soil Vapor	Indoor Air	Industrial/Commercial Worker	Adult	Inhalation	On-Site/Off-Site	Qual	Vapor intrusion unlikely; deep bedrock groundwater is separated from surface by confining unit and shallow aquifer.

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe:	Future
Medium:	Bedrock/Till Groundwater
Exposure Medium:	Bedrock/Till Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4) (N/C) Tap Water	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
<i>Metals</i>															
Tap Water	7429-90-5	Aluminum	110 J	6,730	ug/l	RMW-13D	12 / 18	200 - 200	6,730	NE	3,700 (N)	--	--	Y	ASL
	7440-36-0	Antimony	0.34 J	1.6 J	ug/l	RMW-13D	3 / 19	2.0 - 60	1.6	NE	1.5 (N)	--	--	Y	ASL
	7440-38-2	Arsenic	0.24 J	2.8 J	ug/l	RMW-13D	10 / 19	1.0 - 10	2.8	NE	0.045 (C)	10	MCL	Y	ASL
	7440-39-3	Barium	13.6 J	191 J	ug/l	RMW-13D	16 / 19	10 - 200	191	NE	730 (N)	--	--	N	BSL
	7440-43-9	Cadmium	0.08 J	1.9	ug/l	RMW-13D	5 / 19	1 - 5	1.9	NE	1.8 (N)	--	--	Y	ASL
	7440-70-2	Calcium	6,320 J	277,000 J	ug/l	MW-5D	19 / 19	5000 - 5000	277,000	NE	--	--	--	N	NUTR
	7440-47-3	Chromium	1.4 J	211	ug/l	MW-5D	15 / 19	2 - 10	211	NE	0.043 (C) ⁷	100	MCL	Y	ASL
	7440-48-4	Cobalt	0.34 J	15	ug/l	RMW-12D	9 / 19	1.0 - 50	15	NE	1.1 (N)	--	--	Y	ASL
	7440-50-8	Copper	1.8 J	77.7 J	ug/l	RMW-13D	10 / 19	2.0 - 25	77.7	NE	150 (N)	--	--	N	BSL
	7439-89-6	Iron	185 J	9,990 J	ug/l	RMW-13D	16 / 19	100 - 100	9,990	NE	2,600 (N)	--	--	Y	ASL
	7439-92-1	Lead	0.28 J	48.6 J	ug/l	RMW-13D	11 / 19	1.0 - 3	49	NE	15 (LCR) ⁸	15	(LCR) ⁷	Y	ASL
	7439-95-4	Magnesium	162 J	17,600	ug/l	MW-5D	12 / 19	5000 - 5000	17,600	NE	--	--	--	N	NUTR
	7439-96-5	Manganese	3.7	231	ug/l	RMW-13D	18 / 19	1.0 - 15	231	NE	88 (N)	--	--	Y	ASL
	7439-97-6	Mercury	0.13 J	0.15	ug/l	RMW-13D	2 / 19	0.2 - 0.2	0.15	NE	0.057 (N)	--	--	Y	ASL
	7440-02-0	Nickel	3.3 J	50.4	ug/l	MW-11S	14 / 19	1.0 - 40	50.4	NE	73 (N)	--	--	N	BSL
	7440-09-7	Potassium	1,380 J	14,300 J	ug/l	RMW-11D	12 / 19	5000 - 5000	14,300	NE	--	--	--	N	NUTR
	7782-49-2	Selenium	0.27 J	6	ug/l	RMW-13D	8 / 19	5.0 - 5	6.0	NE	18 (N)	50	MCL	N	BSL
	7440-22-4	Silver	0.75 J	1.6	ug/l	RMW-12D	3 / 19	1.0 - 10	1.6	NE	18 (N)	--	--	N	BSL
	7440-23-5	Sodium	6,560 J	130,000	ug/l	RMW-13D	19 / 19	5000 - 5000	130,000	NE	--	--	--	N	NUTR
	7440-62-2	Vanadium	0.48 J	43.1 J	ug/l	RMW-8D	10 / 18	5.0 - 50	43	NE	18 (N)	--	--	Y	ASL
	7440-66-6	Zinc	5.4 J	427 J	ug/l	RMW-13D	16 / 19	2.0 - 20	427	NE	1,110 (N)	--	--	N	BSL
<i>PESTPCBs</i>															
	959-98-8	Alpha-Endosulfan	0.035 J	0.063	ug/l	RMW-13D	2 / 22	0.049 - 0.054	0.063	NE	22 (N)	--	--	N	BSL
	319-85-7	Beta-BHC	0.015 J	0.015 J	ug/l	RMW-13D	1 / 22	0.049 - 0.054	0.015	NE	0.037 (C)	--	--	N	BSL
	319-86-8	Delta-BHC	0.011 J	0.011 J	ug/l	RMW-13D	1 / 22	0.049 - 0.054	0.011	NE	0.037 (C)	--	--	N	BSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe:	Future
Medium:	Bedrock/Till Groundwater
Exposure Medium:	Bedrock/Till Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4) (N/C) Tap Water	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
SVOCs															
	117-81-7	Bis(2-Ethylhexyl) Phthalate	4 J	7	ug/l	MW-8R	4 / 44	4.8 - 10	7	NE	4.8 (C)	6.0	MCL	Y	ASL
	84-74-2	Di-N-Butyl Phthalate	2 J	2 J	ug/l	MW-25D	1 / 44	4.8 - 10	2	NE	370 (N)	--	--	N	BSL
	206-44-0	Fluoranthene	3 J	3 J	ug/l	MW-24R	1 / 44	4.8 - 10	3	NE	150 (N)	--	--	N	BSL
	85-01-8	Phenanthrene	2 J	2 J	ug/l	MW-24R	1 / 44	4.8 - 10	2	NE	110 SURR	--	--	N	BSL
	108-95-2	Phenol	2.5 J	3 J	ug/l	MW-21D	2 / 44	4.8 - 10	3	NE	1,100 (N)	--	--	N	BSL
	129-00-0	Pyrene	2 J	2 J	ug/l	MW-24R	1 / 44	4.8 - 10	2	NE	110 (N)	--	--	N	BSL
VOCs															
Tap Water	71-55-6	1,1,1-Trichloroethane	0.25 J	20 J	ug/l	MW-5D	13 / 71	0.5 - 50	20	NE	910 (N)	200	MCL	N	BSL
	79-00-5	1,1,2-Trichloroethane	0.81	1.1	ug/l	MW-5D	4 / 70	0.5 - 50	1.1	NE	0.24 (C)	5	MCL	Y	ASL
	75-34-3	1,1-Dichloroethane	0.1 J	600	ug/l	MW-21D	45 / 73	0.5 - 130	600	NE	2.4 (C)	--	--	Y	ASL
	75-35-4	1,1-Dichloroethene	0.23 J	230 J	ug/l	MW-5D	20 / 71	0.5 - 130	230	NE	34 (N)	7	MCL	Y	ASL
	120-82-1	1,2,4-Trichlorobenzene	0.19 J	77 J	ug/l	MW-5D	2 / 70	0.5 - 50	77	NE	0.41 (C) ⁽⁶⁾	70	MCL	Y	ASL
	95-50-1	1,2-Dichlorobenzene	0.11 J	5.0	ug/l	MW-5D	6 / 70	0.5 - 50	5	NE	37 (N)	600	MCL	N	BSL
	107-06-2	1,2-Dichloroethane	0.46 J	120	ug/l	MW-5D	22 / 71	0.5 - 130	120	NE	0.15 (C)	5	MCL	Y	ASL
	78-87-5	1,2-Dichloropropane	0.96	1.1	ug/l	MW-5D	4 / 70	0.5 - 50	1.1	NE	0.39 (C)	5	MCL	Y	ASL
	106-46-7	1,4-Dichlorobenzene	0.15 J	0.16 J	ug/l	MW-8R	2 / 70	0.5 - 50	0.16	NE	0.43 (C)	75	MCL	N	BSL
	123-91-1	1,4-Dioxane	0.47 J	4300	ug/l	MW-21D	36 / 46	2 - 1000	4300	NE	0.67 (C)	--	--	Y	ASL
	78-93-3	2-Butanone	2.2 J	7.6 J	ug/l	MW-13D	7 / 70	5 - 160	7.6	NE	710 (N)	--	--	N	BSL
	591-78-6	2-Hexanone	3.2 J	3.2 J	ug/l	MW-21D	1 / 68	5 - 160	3.2	NE	4.7 (N)	--	--	N	BSL
	108-10-1	4-Methyl-2-Pentanone	1.6 J	120	ug/l	B09-4	14 / 69	5 - 180	120	NE	200 (N)	--	--	N	BSL
	67-64-1	Acetone	2.8 J	3100	ug/l	B09-1	13 / 72	5 - 180	3100	NE	2200 (N)	--	--	Y	ASL
	71-43-2	Benzene	0.1 J	420	ug/l	MW-21D	23 / 72	0.5 - 50	420	NE	0.41 (C)	5	MCL	Y	ASL
	75-27-4	Bromodichloromethane	0.26	7.2	ug/l	B09-5	18 / 72	0.5 - 50	7.2	NE	0.12 (C)	80	MCL	Y	ASL
	75-25-2	Bromoform	0.12	0.84	ug/l	B09-3	4 / 70	0.5 - 50	0.84	NE	8.5 (C)	80	MCL	N	BSL
	75-15-0	Carbon Disulfide	0.083 J	1.1	ug/l	MW-25D	8 / 70	0.5 - 50	1.1	NE	100 (N)	--	--	N	BSL
	108-90-7	Chlorobenzene	0.11 J	23	ug/l	MW-5D	9 / 70	0.5 - 130	23	NE	9.1 (N)	100	MCL	Y	ASL
	75-00-3	Chloroethane	3.2	360	ug/l	MW-21D	4 / 72	0.5 - 50	360	NE	2,100 (N)	--	--	N	BSL
	67-66-3	Chloroform	0.45 J	200 J	ug/l	MW-5D	34 / 72	0.5 - 230	200	NE	0.19 (C)	80	MCL	Y	ASL
	74-87-3	Chloromethane	0.11 J	0.54	ug/l	MW-25D	3 / 70	0.5 - 50	0.54	NE	19 (N)	--	--	N	BSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe:	Future
Medium:	Bedrock/Till Groundwater
Exposure Medium:	Bedrock/Till Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (4) (N/C) Tap Water		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)		
											ARAR/TBC Value	Source						
Tap Water	156-59-2	Cis-1,2-Dichloroethene	0.1	J	910	ug/l	MW-5D	51 / 71	0.5 - 130	910	NE	7.3	(N)	70	MCL	Y	ASL	
	110-82-7	Cyclohexane	0.77		24	ug/l	MW-21D	4 / 70	0.5 - 50	24	NE	1300	(N)	--	--	N	BSL	
	124-48-1	Dibromochloromethane	0.23	J	2.6	ug/l	B09-5	16 / 72	0.5 - 50	2.6	NE	0.15	(C)	--	--	Y	ASL	
	75-71-8	Dichlorodifluoromethane	0.12	J	1.1	ug/l	MW-5D	5 / 70	0.5 - 50	1.1	NE	20	(N)	--	--	N	BSL	
	100-41-4	Ethylbenzene	0.15	J	11	ug/l	MW-21D	8 / 70	0.5 - 50	11	NE	1.5	(C)	70	MCL	Y	ASL	
	76-13-1	Freon 113	0.23	J	210	J	ug/l	MW-5D	17 / 71	0.5 - 100	210	NE	5,900	(N)	--	--	N	BSL
	98-82-8	Isopropylbenzene	0.39	J	0.61	ug/l	MW-5D	4 / 70	0.5 - 50	0.61	NE	68	(N)	--	--	N	BSL	
	108-87-2	Methyl Cyclohexane	0.2	J	1.2	ug/l	MW-5D	4 / 70	0.5 - 50	1.2	NE	--	--	--	--	Y	NSL	
	1634-04-4	Methyl Tert-Butyl Ether	0.12	J	10	ug/l	MW-17D/MW-18D	8 / 70	0.5 - 50	10	NE	12	(C)	--	--	N	BSL	
	75-09-2	Methylene Chloride	0.13	J	5.3	ug/l	MW-21D	11 / 71	0.5 - 50	5.3	NE	4.8	(C)	--	--	Y	ASL	
	127-18-4	Tetrachloroethene	0.1	J	1000	ug/l	MW-5D	33 / 71	0.5 - 130	1000	NE	3.5	(N) ⁹	5	MCL	Y	ASL	
	108-88-3	Toluene	0.11	J	17	ug/l	B09-4	21 / 71	0.5 - 50	17	NE	230	(N)	1,000	MCL	N	BSL	
	156-60-5	Trans-1,2-Dichloroethene	0.35	J	4.8	J	ug/l	MW-5D	10 / 70	0.5 - 50	4.8	NE	11	(N)	100	MCL	N	BSL
	79-01-6	Trichloroethene	0.12	J	3600	ug/l	MW-5D	51 / 72	0.5 - 130	3,600	NE	0.26	(N)	5	MCL	Y	ASL	
	75-69-4	Trichlorofluoromethane	0.11	J	1.4	J	ug/l	MW-5D	5 / 70	0.5 - 50	1.4	NE	130	(N)	--	--	N	BSL
	75-01-4	Vinyl Chloride	0.21	J	150	J	ug/l	MW-5D	19 / 72	0.5 - 100	150	NE	0.016	(C)	2	MCL	Y	ASL
	1330-20-7	Xylenes, Total	0.04		12.7	ug/l	B09-4	15 / 71	0.5 - 50	12.7	NE	20	(N)	10,000	MCL	N	BSL	

Footnotes:

(1) The Qualifier codes are defined as the following:

J - The analyte was detected and is considered an estimated value.

(2) Maximum detected value for compounds detected in at least one sample.

(3) NE - Not Established

(4) Units are the same as those for Screening Concentrations. Screening Toxicity Values are USEPA Regional Screening Levels (RSLs) for Tap Water (last updated November 2010). Values were adjusted for a HI = 0.1 for non-cancer effects, where (C) = Cancer RSL; (N) = Noncancer RSL. For lead and thallium, no RSL are available, therefore, the MCL has been used as a screening value.

SURR - Surrogate screening value used (endosulfan for endosulfan sulfate; endrin for endrin aldehyde; pyrene for phenanthrene)

(5) ASL = Above Screening Limit; BSL = Below Screening Limit; NSL = No Screening Limit; NUTR = Essential Nutrient

(6) Although this compound is a carcinogen, screening toxicity value for this compound is based on non-carcinogenic effects as noncarcinogenic criteria is less than carcinogenic criteria when factor of 0.1 is applied.

(7) RSL for chromium⁶⁺ used for screening purposes.

(8) According to the USEPA Office of Water, the value of 15 ug/L for lead in tap water is an action level based on the Lead and Copper Rule (LCR)

(9) RSL value calculated using the recently released (February 2012) toxicity values for tetrachloroethene using USEPA on-line RSL calculator as described in Section 4.0.

TABLE 3.1
EXPOSURE POINT CONCENTRATION SUMMARY: GROUNDWATER
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe:	Future
Medium:	Bedrock/Till Groundwater
Exposure Medium:	Tap Water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) (1)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
<i>Metals</i>									
Aluminum	ug/L	706	2,983 (ND)	6,730	2,983	ug/l	97.5% KM (Chebyshev) UCL	(3)	
Antimony	ug/l	29.3	1.5 (N)	1.6 J	1.5	ug/l	95% KM (t) UCL	(3)	
Arsenic	ug/l	5.0	1.8 (N)	2.8 J	1.8	ug/l	95% KM (t) UCL	(3)	
Cadmium	ug/l	2.8	0.71 (LN)	1.9	0.71	ug/l	95% KM (BCA) UCL	(3)	
Chromium	ug/l	30	76.8 (LN)	211	76.8	ug/l	95% KM (Chebyshev) UCL	(3)	
Chromium ⁺³	ug/l				71.3	ug/l	--	(5)	
Chromium ⁺⁶	ug/l				5.5	ug/l	--	(5)	
Cobalt	ug/l	23	6.4 (N)	15	6.4	ug/l	95% KM (t) UCL	(3)	
Iron	ug/l	1,489	5,027 (LN)	9,990 J	5,027	ug/l	97.5% KM (Chebyshev) UCL	(3)	
Manganese	ug/l	69	130 (LN)	231	130	ug/l	95% KM (Chebyshev) UCL	(3)	
Mercury	ug/l	0.19	0.16 (ND)	0.15	0.15	ug/l	Max	(4)	
Vanadium	ug/l	20	18 (LN)	43.1 J	18	ug/l	95% KM (BCA) UCL	(3)	
<i>SVOCs</i>									
Bis(2-Ethylhexyl) Phthalate	ug/l	8.4	4.7 (N)	7.0	4.7	ug/l	95% KM (t) UCL	(3)	
<i>VOCs</i>									
1,1,2-Trichloroethane	ug/L	2.2	0.83 (N)	1.1	0.83	ug/l	95% KM (t) UCL	(3)	
1,1-Dichloroethane	ug/L	21.6	91 (ND)	600	91	ug/l	97.5% KM (Chebyshev) UCL	(3)	
1,1-Dichloroethene	ug/L	15.6	24 (LN)	230 J	24	ug/l	95% KM (t) UCL	(3)	
1,2,4-Trichlorobenzene	ug/L	3.3	11 (ND)	77 J	11	ug/l	97.5% KM (Chebyshev) UCL	(3)	
1,2-Dichloroethane	ug/l	7.7	11 (LN)	120	11	ug/l	95% KM (t) UCL	(3)	
1,2-Dichloropropane	ug/l	2.2	0.97 (ND)	1.1	0.97	ug/l	95% KM (t) UCL	(3)	
1,4-Dioxane	ug/l	417	1,958 (ND)	4,300	1,958	ug/l	99% KM (Chebyshev) UCL	(3)	
Acetone	ug/l	77	358 (LN)	3,100	358	ug/l	97.5% KM (Chebyshev) UCL	(3)	
Benzene	ug/l	14	60 (ND)	420	60	ug/l	97.5% KM (Chebyshev) UCL	(3)	
Bromodichloromethane	ug/l	2.91	1.7 (N)	7.2	1.7	ug/l	95% KM (t) UCL	(3)	
Chlorobenzene	ug/l	3.3	2.3 (LN)	23	2.3	ug/l	95% KM (t) UCL	(3)	
Chloroform	ug/l	15	18 (LN)	200 J	18	ug/l	95% KM (BCA) UCL	(3)	
Cis-1,2-Dichloroethene	ug/l	80	235 (ND)	910	235	ug/l	97.5% KM (Chebyshev) UCL	(3)	
Dibromochloromethane	ug/l	2.3	0.68 (N)	2.6	0.68	ug/l	95% KM (t) UCL	(3)	

TABLE 3.1
EXPOSURE POINT CONCENTRATION SUMMARY: GROUNDWATER
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe:	Future
Medium:	Bedrock/Till Groundwater
Exposure Medium:	Tap Water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) (1)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Tap Water	Ethylbenzene	ug/l	2.5	0.88 (LN)	11	0.88	ug/l	95% KM (t) UCL	(3)
	Methyl Cyclohexane	ug/l	2.2	0.28 (N)	1.2	0.28	ug/l	95% KM (t) UCL	(3)
	Methylene Chloride	ug/l	2.2	0.49 (ND)	5.3	0.49	ug/l	95% KM (t) UCL	(3)
	Tetrachloroethene	ug/l	56	215 (ND)	1,000	215	ug/l	97.5% KM (Chebyshev) UCL	(3)
	Trichloroethene	ug/l	202	735 (ND)	3,600	735	ug/l	97.5% KM (Chebyshev) UCL	(3)
	Vinyl Chloride	ug/l	9.3	12 (LN)	150 J	12	ug/l	95% KM (t) UCL	(3)

Footnotes:

- No maximum detected value as chemical was not detected once in sample set

(1) ProUCL version 4.1 was used to calculate 95% UCL values.

NC - 95% UCL not calculated as ProUCL is unable to calculate 95% UCL when only one detected value in dataset.

N - Normal distribution

LN - Lognormal distribution

ND - Data does not follow discernable distribution.

(2) Since ProUCL is unable to calculate 95% UCL with one detected value, the maximum detected value was selected as the EPC.

(3) ProUCL suggests using statistic less than maximum observed value, therefore, ProUCL output was selected as EPC.

(4) The ProUCL output is greater than the maximum observed observation, therefore, the maximum value is used as the EPC.

(5) Data for total chromium was separated as 7.2% hexavalent chromium and the remainder trivalent chromium as described in Section 5.0 of the report.

TABLE 3.2
DERIVATION OF DA_{event} FOR DERMAL EXPOSURE ROUTE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe:	Future
Medium:	Bedrock/Till Groundwater (1)
Exposure Medium:	Groundwater

Exposure Point	Chemical of Potential Concern	RME Scenario				CT Scenario		
		Value (ug/L)	Adult Resident DA _{event} (equation)	Child Resident DA _{event} (equation)	Adult Worker DA _{event} (equation)	Adult Resident DA _{event} (equation)	Child Resident DA _{event} (equation)	Adult Worker DA _{event} (equation)
<i>Metals</i>								
	Aluminum	2,983	7.5E-07 (a)	1.3E-06 (a)	1.5E-06 (a)	3.0E-07 (a)	4.2E-07 (a)	1.5E-06 (a)
	Antimony	1.5	3.8E-10 (a)	6.8E-10 (a)	7.5E-10 (a)	1.5E-10 (a)	2.1E-10 (a)	7.5E-10 (a)
	Arsenic	2	4.5E-10 (a)	8.0E-10 (a)	8.9E-10 (a)	1.8E-10 (a)	2.5E-10 (a)	8.9E-10 (a)
	Cadmium	0.7	1.8E-10 (a)	3.2E-10 (a)	3.5E-10 (a)	7.1E-11 (a)	9.9E-11 (a)	3.5E-10 (a)
	Chromium ⁺³	71.3	1.8E-08 (a)	3.2E-08 (a)	3.6E-08 (a)	7.1E-09 (a)	1.0E-08 (a)	3.6E-08 (a)
	Chromium ⁺⁶	5.5	1.4E-09 (a)	2.5E-09 (a)	2.8E-09 (a)	5.5E-10 (a)	7.7E-10 (a)	2.8E-09 (a)
	Cobalt	6.4	1.6E-09 (a)	2.9E-09 (a)	3.2E-09 (a)	6.4E-10 (a)	8.9E-10 (a)	3.2E-09 (a)
	Iron	5,027	1.3E-06 (a)	2.3E-06 (a)	2.5E-06 (a)	5.0E-07 (a)	7.0E-07 (a)	2.5E-06 (a)
	Manganese	130	3.2E-08 (a)	5.8E-08 (a)	6.5E-08 (a)	1.3E-08 (a)	1.8E-08 (a)	6.5E-08 (a)
	Mercury	0.15	3.8E-11 (a)	6.8E-11 (a)	7.5E-11 (a)	1.5E-11 (a)	2.1E-11 (a)	7.5E-11 (a)
	Vanadium	18	4.5E-09 (a)	8.1E-09 (a)	9.0E-09 (a)	1.8E-09 (a)	2.5E-09 (a)	9.0E-09 (a)
<i>SVOCs</i>								
	Bis(2-Ethylhexyl) Phthalate	4.7	5.3E-07 (b)	7.1E-07 (b)	7.5E-07 (b)	3.4E-07 (b)	4.0E-07 (b)	7.5E-07 (b)
<i>VOCs</i>								
Tap Water	1,1,2-Trichloroethane	0.83	5.7E-09 (b)	7.6E-09 (b)	8.0E-09 (b)	3.6E-09 (b)	4.2E-09 (b)	8.0E-09 (b)
	1,1-Dichloroethane	91	5.2E-07 (b)	6.9E-07 (b)	7.3E-07 (b)	3.3E-07 (b)	3.9E-07 (b)	7.3E-07 (b)
	1,1-Dichloroethene	24	2.5E-07 (b)	3.3E-07 (b)	3.5E-07 (b)	1.6E-07 (b)	1.8E-07 (b)	3.5E-07 (b)
	1,2,4-Trichlorobenzene	10.9	1.0E-06 (b)	1.4E-06 (b)	1.5E-06 (b)	6.6E-07 (b)	7.8E-07 (b)	1.5E-06 (b)
	1,2-Dichloroethane	11.3	4.0E-08 (b)	5.4E-08 (b)	5.7E-08 (b)	2.5E-08 (b)	3.0E-08 (b)	5.7E-08 (b)
	1,2-Dichloropropane	0.97	7.1E-09 (b)	9.6E-09 (b)	1.0E-08 (b)	4.5E-09 (b)	5.3E-09 (b)	1.0E-08 (b)
	1,4-Dioxane	1,958	5.1E-07 (b)	6.9E-07 (b)	7.3E-07 (b)	3.2E-07 (b)	3.8E-07 (b)	7.3E-07 (b)
	Acetone	358	-- (b)	-- (b)	-- (b)	-- (b)	-- (b)	-- (b)
	Benzene	60	6.6E-07 (b)	8.9E-07 (b)	9.4E-07 (b)	4.2E-07 (b)	5.0E-07 (b)	9.4E-07 (b)
	Bromodichloromethane	1.7	1.0E-08 (b)	1.4E-08 (b)	1.5E-08 (b)	6.6E-09 (b)	7.8E-09 (b)	1.5E-08 (b)
	Chlorobenzene	2.3	6.1E-08 (b)	8.2E-08 (b)	8.7E-08 (b)	3.9E-08 (b)	4.6E-08 (b)	8.7E-08 (b)
	Chloroform	18	1.2E-07 (b)	1.6E-07 (b)	1.7E-07 (b)	7.8E-08 (b)	9.2E-08 (b)	1.7E-07 (b)
	Cis-1,2-Dichloroethene	235	1.5E-06 (b)	2.0E-06 (b)	2.2E-06 (b)	9.6E-07 (b)	1.1E-06 (b)	2.2E-06 (b)
	Dibromochloromethane	0.68	-- (b)	-- (b)	-- (b)	-- (b)	-- (b)	-- (b)
	Ethylbenzene	0.88	3.9E-08 (b)	5.2E-08 (b)	5.4E-08 (b)	2.4E-08 (b)	2.9E-08 (b)	5.4E-08 (b)
	Methyl Cyclohexane	0.28	-- (b)	-- (b)	-- (b)	-- (b)	-- (b)	-- (b)
	Methylene Chloride	0.49	1.3E-09 (b)	1.8E-09 (b)	1.9E-09 (b)	8.5E-10 (b)	1.0E-09 (b)	1.9E-09 (b)

TABLE 3.2
DERIVATION OF DA_{event} FOR DERMAL EXPOSURE ROUTE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe:	Future
Medium:	Bedrock/Till Groundwater (1)
Exposure Medium:	Groundwater

Exposure Point	Chemical of Potential Concern	RME Scenario				CT Scenario		
		Value (ug/L)	Adult Resident DA _{event} (equation)	Child Resident DA _{event} (equation)	Adult Worker DA _{event} (equation)	Adult Resident DA _{event} (equation)	Child Resident DA _{event} (equation)	Adult Worker DA _{event} (equation)
Tap Water	Tetrachloroethene	215	9.4E-06 (b)	1.3E-05 (b)	1.3E-05 (b)	5.9E-06 (b)	7.0E-06 (b)	1.3E-05 (b)
	Trichloroethene	735	9.3E-06 (b)	1.2E-05 (b)	1.3E-05 (b)	5.9E-06 (b)	6.9E-06 (b)	1.3E-05 (b)
	Vinyl Chloride	12	4.4E-08 (b)	5.9E-08 (b)	6.2E-08 (b)	2.8E-08 (b)	3.3E-08 (b)	6.2E-08 (b)

Footnotes:

DA_{event} units in mg/cm²-event

(a) - Formula for inorganic compounds:

$$DA_{event} = K_p \times C_w \times t_{event}$$

(b) - Formula for t_{event} <= t* :

$$DA_{event} = 2FA \times K_p \times C_w \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$$

EPC value used for C_w converted from ug/L to mg/cm³ via a factor of 0.000001

Input values for K_p, t_{event}, FA, B, and τ_{event} are provided in Appendix A.

TABLE 3.3
DEVELOPMENT OF WATER VAPOR CONCENTRATIONS FOR SHOWER MODEL
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe:	Future
Medium:	Bedrock/Till Groundwater (1)
Exposure Medium:	Groundwater

Exposure Point	Chemical of Potential Concern	RME Exposure Point Concentration					CT Exposure Point Concentration		
		Groundwater EPC	Units	Adult	Child	Units	Adult	Child	Units
SVOCs									
Bis(2-Ethylhexyl) Phthalate	4.7	ug/l	9.8E-07	1.7E-06	ug/m ³	1.6E-07	1.6E-07	ug/m ³	
VOCs									
1,1,2-Trichloroethane	0.83	ug/l	1.3E-05	2.2E-05	ug/m ³	2.1E-06	2.1E-06	ug/m ³	
1,1-Dichloroethane	91	ug/l	1.6E-03	2.8E-03	ug/m ³	2.7E-04	2.6E-04	ug/m ³	
1,1-Dichloroethene	24	ug/l	4.4E-04	7.8E-04	ug/m ³	7.3E-05	7.2E-05	ug/m ³	
1,2,4-Trichlorobenzene	10.9	ug/l	1.6E-04	2.8E-04	ug/m ³	2.6E-05	2.6E-05	ug/m ³	
1,2-Dichloroethane	11.3	ug/l	2.0E-04	3.5E-04	ug/m ³	3.3E-05	3.3E-05	ug/m ³	
1,2-Dichloropropane	0.97	ug/l	1.6E-05	2.8E-05	ug/m ³	2.6E-06	2.6E-06	ug/m ³	
1,4-Dioxane	1,958	ug/l	5.7E-03	1.0E-02	ug/m ³	9.5E-04	9.3E-04	ug/m ³	
Acetone	358	ug/l	4.0E-03	7.2E-03	ug/m ³	6.8E-04	6.7E-04	ug/m ³	
Benzene	60	ug/l	1.0E-03	1.8E-03	ug/m ³	1.7E-04	1.7E-04	ug/m ³	
Bromodichloromethane	1.7	ug/l	3.1E-05	5.4E-05	ug/m ³	5.1E-06	5.0E-06	ug/m ³	
Chlorobenzene	2.3	ug/l	3.8E-05	6.8E-05	ug/m ³	6.3E-06	6.2E-06	ug/m ³	
Chloroform	18	ug/l	3.3E-04	5.9E-04	ug/m ³	5.5E-05	5.5E-05	ug/m ³	
Cis-1,2-Dichloroethene	235	ug/l	4.3E-03	7.6E-03	ug/m ³	7.2E-04	7.1E-04	ug/m ³	
Dibromochloromethane	0.68	ug/l	1.1E-05	2.0E-05	ug/m ³	1.9E-06	1.9E-06	ug/m ³	
Ethylbenzene	0.88	ug/l	1.3E-05	2.4E-05	ug/m ³	2.2E-06	2.2E-06	ug/m ³	
Methyl Cyclohexane	0.28	ug/l	--	--	ug/m ³	--	--	ug/m ³	
Methylene Chloride	0.49	ug/l	9.6E-06	1.7E-05	ug/m ³	1.6E-06	1.6E-06	ug/m ³	
Tetrachloroethene	215	ug/l	3.5E-03	6.3E-03	ug/m ³	5.9E-04	5.8E-04	ug/m ³	
Trichloroethene	735	ug/l	1.2E-02	2.2E-02	ug/m ³	2.1E-03	2.0E-03	ug/m ³	
Vinyl Chloride	12	ug/l	2.3E-04	4.0E-04	ug/m ³	3.8E-05	3.7E-05	ug/m ³	

Notes:

(1) Derivation of Water Vapor EPCs provided in Appendix B

TABLE 4.1.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Medium: Bedrock/Till Groundwater
Exposure Medium: Tap Water
Exposure Point: Tap Water/Water Vapors
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/Reference	Intake Equation/Model Name
Ingestion	BW	Body Weight	kg	70	EPA 1991	$(CW \times CF \times ED \times EF \times IR) \div (BW \times AT)$
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	10,950	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 1991	
	ED	Exposure Duration	yr	30	EPA 1991	
	IR	Ingestion Rate	L/day	2	EPA 1991	
	CF	Conversion Factor	mg/ug	0.001	--	
Dermal	CW	Chemical Concentration in Groundwater	ug/L	Table 3.1	Table 3.1	$(DA_{event} \times EV \times ED \times EF \times SA) \div (BW \times AT)$
	BW	Body Weight	kg	70	EPA 1991	
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	10,950	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 1991	
	ED	Exposure Duration	yr	30	EPA 1991	
	EV	Event Frequency	events/day	1	EPA 2004	
Inhalation	DA _{event}	Absorbed Dose per Event	mg/cm ² -event	Table 3.2	EPA 2004	$(CA \times ED \times EF \times ET) \div (AT)$ (includes 0.25 hours of showering time and 0.33 hours time spent in bathroom following shower)
	SA	Skin Surface Area	cm ²	18,000	EPA 2004	
	AT-C	Averaging Time Carcinogen	hours	613,200	EPA 2009	
	AT-N	Averaging Time NonCarcinogen	hours	262,800	EPA 2009	
	EF	Exposure Frequency	day/yr	350	EPA 2009	
	ED	Exposure Duration	yr	30	EPA 2009	
	ET	Exposure Time	hours/day	0.58	EPA Region II Appendix B	

RME: Reasonable Maximum Exposure

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002.

EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors".

OSWER Directive 9285.6-03. March.

EPA 2004, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) FINAL. July.

EPA 2009, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part F, Supplemental Guidance for Inhalation Risk Assessment, January.

TABLE 4.1.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Medium: Bedrock/Till Groundwater
Exposure Medium: Tap Water
Exposure Point: Tap Water/Water Vapors
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	CT Value	CT Rationale/Reference	Intake Equation/Model Name
Ingestion	BW	Body Weight	kg	70	EPA 1991	$(CW \times CF \times ED \times EF \times IR) \div (BW \times AT)$
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	3,285	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 1991	
	ED	Exposure Duration	yr	9	EPA 2004	
	IR	Ingestion Rate	L/day	1	EPA 1991	
	CF	Conversion Factor	mg/ug	0.001	--	
Dermal	CW	Chemical Concentration in Groundwater	ug/L	Table 3.1	Table 3.1	$(DA_{event} \times EV \times ED \times EF \times SA) \div (BW \times AT)$
	BW	Body Weight	kg	70	EPA 1991	
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	3,285	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 1991	
	ED	Exposure Duration	yr	9	EPA 2004	
	EV	Event Frequency	events/day	1	EPA 2004	
Inhalation	DA _{event}	Absorbed Dose per Event	mg/cm ² -event	Table 3.2	EPA 2004	$(CA \times ED \times EF \times ET) \div (AT)$ (includes 0.1 hours of showering time and 0.15 hours time spent in bathroom following shower)
	SA	Skin Surface Area	cm ²	18,000	EPA 2004	
	AT-C	Averaging Time Carcinogen	hours	613,200	EPA 2009	
	AT-N	Averaging Time NonCarcinogen	hours	78,840	EPA 2009	
	EF	Exposure Frequency	day/yr	350	EPA 2009	
	ED	Exposure Duration	yr	9	EPA 2009	
	ET	Exposure Time	hours/day	0.25	EPA Region II Appendix B	
	C _{air}	Chemical Concentration in Air	ug/m ³	Table 3.3		

CT: Central Tendency

EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors".

OSWER Directive 9285.6-03. March.

EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa

EPA 2002, Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, December, OSWER 9355.4-24, for PEF see text.

EPA 2004, Risk Assessment Guidance for Superfund: Vol 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) FINAL. July.

EPA 2009, Risk Assessment Guidance for Superfund: Vol 1: Human Health Evaluation Manual, Part F, Supplemental Guidance for Inhalation Risk Assessment, January.

TABLE 4.2.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Medium: Bedrock/Till Groundwater
Exposure Medium: Tap Water
Exposure Point: Tap Water/Water Vapors
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/Reference	Intake Equation/Model Name
Ingestion	BW	Body Weight	kg	15	EPA 1991	$(CW \times CF \times ED \times EF \times IR) \div (BW \times AT)$
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 1991	
	ED	Exposure Duration	yr	6	EPA 1991	
	IR	Ingestion Rate	L/day	1	EPA 1991	
	CF	Conversion Factor	mg/ug	0.001	--	
Dermal	CW	Chemical Concentration in Groundwater	ug/L	Table 3.1	Table 3-1	$(DA_{event} \times EV \times ED \times EF \times SA) \div (BW \times AT)$
	BW	Body Weight	kg	15	EPA 1991	
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 1991	
	ED	Exposure Duration	yr	6	EPA 1991	
	EV	Event Frequency	events/day	1	EPA 2004	
Inhalation	DA _{event}	Absorbed Dose per Event	mg/cm ² -event	Table 3.2	EPA 2004	$(CA \times ED \times EF \times ET) \div (AT)$ (includes 0.45 hours of bathing time and 0.19 hours time spent in bathroom following shower)
	SA	Skin Surface Area	cm ²	6,600	EPA 2004	
	AT-C	Averaging Time Carcinogen	hours	613,200	EPA 2009	
	AT-N	Averaging Time NonCarcinogen	hours	52,560	EPA 2009	
	EF	Exposure Frequency	day/yr	350	EPA 2009	
	ED	Exposure Duration	yr	6	EPA 2009	
	ET	Exposure Time	hours/day	1	EPA Region II Appendix B	

RME: Reasonable Maximum Exposure

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002

EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors".

OSWER Directive 9285.6-03. March.

EPA 2004, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) FINAL. July.

EPA 2009, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part F, Supplemental Guidance for Inhalation Risk Assessment, January.

TABLE 4.2.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Medium: Bedrock/Till Groundwater
Exposure Medium: Tap Water
Exposure Point: Tap Water/Water Vapors
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	CT Value	CT Rationale/Reference	Intake Equation/Model Name
Ingestion	BW	Body Weight	kg	15	EPA 1991	(CW x CF x ED x EF x IR) ÷ (BW x AT) Table 3-18; mean (rounded up from 0.46 L/day) for total tap water intake ages 1-4
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 1991	
	ED	Exposure Duration	yr	6	EPA 1991	
	IR	Ingestion Rate	L/day	0.5	EPA 1997	
	CF	Conversion Factor	mg/ug	0.001	--	
Dermal	CW	Chemical Concentration in Groundwater	ug/L	Table 3.1	Table 3.1	(DA _{event} x EV x ED x EF x SA) ÷ (BW x AT)
	BW	Body Weight	kg	15	EPA 1991	
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 1991	
	ED	Exposure Duration	yr	6	EPA 1991	
	EV	Event Frequency	events/day	1	EPA 2004	
Inhalation	DA _{event}	Absorbed Dose per Event	mg/cm ² -event	Table 3.2	EPA 2004	(CA x ED x EF x ET) ÷ (AT) (includes 0.14 hours of showering time and 0.19 hours time spent in bathroom following shower)
	SA	Skin Surface Area	cm ²	6,600	EPA 2004	
	AT-C	Averaging Time Carcinogen	hours	613,200	EPA 2009	
	AT-N	Averaging Time NonCarcinogen	hours	52,560	EPA 2009	
	EF	Exposure Frequency	day/yr	350	EPA 2009	
	ED	Exposure Duration	yr	6	EPA 2009	
	ET	Exposure Time	hours/day	0.33	EPA Region II Appendix B	

CT: Central Tendency

EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors".

OSWER Directive 9285.6-03. March.

EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa, IN: Table 5-23. Long-term child/3-5 years old.

EPA 2004, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) FINAL. July.

EPA 2009, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part F, Supplemental Guidance for Inhalation Risk Assessment, January.

TABLE 4.3.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Medium: Bedrock/Till Groundwater
Exposure Medium: Tap water
Exposure Point: Tap Water
Receptor Population: Industrial/Commercial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/Reference	Intake Equation/Model Name
Ingestion	BW	Body Weight	kg	70	EPA 1991	$(CW \times CF \times ED \times EF \times IR) \div (BW \times AT)$
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	9,125	EPA 1991	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	25	EPA 1991	
	IR	Ingestion Rate-Water	L/d	1.0	EPA 1989	
	CF	Conversion Factor	mg/ug	0.001	--	
	CW	Chemical Concentration in Water	ug/L	Table 3.1	Table 3.1	
Dermal	BW	Body Weight	kg	70	EPA 1991	$(DA_{event} \times EV \times ED \times EF \times SA) \div (BW \times AT)$
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	9,125	EPA 1991	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	25	EPA 1991	
	EV	Event Frequency	event/day	1	SS	
	DA _{event}	Absorbed Dose per Event	mg/cm ² -event	Table 3.2	EPA 2004	
	SA	Skin Surface Area	cm ²	2,830	EPA 1997	95th percentile for hands and forearms - males

RME: Reasonable Maximum Exposure

SS : Site-specific parameter based upon professional judgement, see text for explanation

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002

EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors".

OSWER Directive 9285.6-03. March.

EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa, SA: Table 6-2, also see explanation in text.

EPA 2004, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) FINAL. July.

TABLE 4.3.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Medium: Bedrock/Till Groundwater
Exposure Medium: Tap Water
Exposure Point: Tap Water
Receptor Population: Industrial/Commercial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	CT Value	CT Rationale/Reference	Intake Equation/Model Name
Ingestion	BW	Body Weight	kg	70	EPA 1991	(CW x CF x ED x EF x IR) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,628	EPA 1991	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	7.2	EPA 1997	
	IR	Ingestion Rate-Water	L/d	0.50	professional judgment	Table 15-160; median tenure for full-time employees
	CF	Conversion Factor	mg/ug	0.001	--	50% of tap water intake for residential exp (Table 4.1CT)
	CW	Chemical Concentration in Water	ug/L	Table 3.1	Table 3.1	
Dermal	BW	Body Weight	kg	70	EPA 1991	(DA _{event} x EV x ED x EF x SA) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,628	EPA 1991	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	7.2	EPA 1991	
	EV	Event Frequency	event/day	1	SS	
	DA _{event}	Absorbed Dose per Event	mg/cm ² -event	Table 3.2	EPA 2004	
	SA	Skin Surface Area	cm ²	2,830	EPA 1997	95th percentile for hands and forearms - males

CT: Central Tendency

SS : Site-specific parameter based upon professional judgement, see text for explanation

EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors".

OSWER Directive 9285.6-03. March.

EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa, SA: Table 6-2, also see explanation in text.

EPA 2004, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) FINAL. July.

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1) value	Absorbed RfD for Dermal		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value (2)	Units			Source(s) (3)	Date (MM/DD/YYYY)
<i>Volatile Organics</i>										
1,1,2-Trichloroethane	Chronic	4.0E-03	mg/kg/day	1 EPA	4.0E-03	mg/kg/day	Blood	1000/1	IRIS	2/1/1995
1,1-Dichloroethane	Chronic	2.0E-01	mg/kg/day	1 EPA	2.0E-01	mg/kg/day	Kidney	3000/1	PPRTV	
1,1-Dichloroethene	Chronic	5.0E-02	mg/kg/day	1 EPA	5.0E-02	mg/kg/day	Liver	100/1	IRIS	8/13/2002
1,2,4-Trichlorobenzene	Chronic	1.0E-02	mg/kg/day	1 EPA	1.0E-02	mg/kg/day	Kidney	1000/1	IRIS	11/1/1996
1,2-Dichloroethane	Chronic	2.0E-02	mg/kg/day	1 EPA	2.0E-02	mg/kg/day	Neurologic effects		PPRTV	
1,2-Dichloropropane	Chronic	9.0E-02	mg/kg/day	1 EPA	9.0E-02	mg/kg/day	---	---	ATSDR	
1,4-Dioxane	Chronic	3.0E-02	mg/kg/day	1 EPA	3.0E-02	mg/kg/day	Liver; Kidney	300/1	IRIS	8/11/2010
Acetone	Chronic	9.0E-01	mg/kg/day	1 EPA	9.0E-01	mg/kg/day	Kidney	1000/1	IRIS	7/31/2003
Benzene	Chronic	4.0E-03	mg/kg/day	1 EPA	4.0E-03	mg/kg/day	Blood	300/1	IRIS	4/17/2003
Bromodichloromethane	Chronic	2.0E-02	mg/kg/day	1 EPA	2.0E-02	mg/kg/day	Kidney	1000/1	IRIS	3/1/1991
Chlorobenzene	Chronic	2.0E-02	mg/kg/day	1 EPA	2.0E-02	mg/kg/day	Liver	1000/1	IRIS	7/1/1993
Chloroform	Chronic	1.0E-02	mg/kg/day	1 EPA	1.0E-02	mg/kg/day	Liver	1000/1	IRIS	10/19/2001
cis-1,2-Dichloroethene	Chronic	2.0E-03	mg/kg/day	1 EPA	2.0E-03	mg/kg/day	Kidney	3000/1	IRIS	9/30/2010
Dibromochloromethane	Chronic	2.0E-02	mg/kg/day	1 EPA	2.0E-02	mg/kg/day	Liver	1000/1	IRIS	3/1/1991
Ethylbenzene	Chronic	1.0E-01	mg/kg/day	1 EPA	1.0E-01	mg/kg/day	Liver and Kidney	1000/1	IRIS	6/1/1991
Methyl Cyclohexane	Chronic	--	mg/kg/day	1 EPA	--	mg/kg/day	---			
Methylene Chloride	Chronic	6.0E-02	mg/kg/day	1 EPA	6.0E-02	mg/kg/day	Liver	100/1	IRIS	3/1/1988
Tetrachloroethene	Chronic	6.0E-03	mg/kg/day	1 EPA	6.0E-03	mg/kg/day	Neurologic effects		IRIS	2/108/2012
Trichloroethene	Chronic	5.0E-04	mg/kg/day	1 EPA	5.0E-04	mg/kg/day	Heart; Thymus; Blood	10/1	IRIS	9/28/2011
Vinyl Chloride	Chronic	3.0E-03	mg/kg/day	1 EPA	3.0E-03	mg/kg/day	Liver	30/1	IRIS	8/7/2000
<i>Semivolatile Organics</i>										
Bis(2-Ethylhexyl) Phthalate	Chronic	2.0E-02	mg/kg/day	1 EPA	2.0E-02	mg/kg/day	Liver	1000/1	IRIS	5/1/1991
<i>Inorganics</i>										
Aluminum	Chronic	1.0E+00	mg/kg/day	1 EPA	1.0E+00	mg/kg/day	Neurologic effects	300/1	PPRTV	
Antimony	Chronic	4.0E-04	mg/kg/day	0.15 EPA	6.0E-05	mg/kg/day	Blood, pancreas	1000/1	IRIS	2/1/1991
Arsenic	Chronic	3.0E-04	mg/kg/day	1 EPA	3.0E-04	mg/kg/day	Skin	3/1	IRIS	2/1/1993
Cadmium	Chronic	5.0E-04	mg/kg/day	0.05 EPA	2.5E-05	mg/kg/day	Kidney	10/1	IRIS	2/1/1994
Chromium ⁺³	Chronic	1.5E+00	mg/kg/day	0.013 EPA	2.0E-02	mg/kg/day	None Reported	100/10	IRIS	9/3/1998
Chromium ⁺⁶	Chronic	3.0E-03	mg/kg/day	0.025 EPA	7.5E-05	mg/kg/day	None Reported	300/3	IRIS	9/3/1998
Cobalt	Chronic	3.0E-04	mg/kg/day	1 EPA	3.0E-04	mg/kg/day	Thyroid	300/1	PPRTV	
Iron	Chronic	7.0E-01	mg/kg/day	1 EPA	7.0E-01	mg/kg/day	Gastrointestinal	1.5	PPRTV	
Manganese	Chronic	2.4E-02	mg/kg/day	0.04 EPA	9.6E-04	mg/kg/day	CNS	1/1	IRIS	5/1/1996
Mercury	Chronic	1.60E-04	mg/kg/day	1 EPA	1.60E-04	mg/kg/day	CNS	10/1	IRIS	7/27/2001
Vanadium	Chronic	5.00E-03	mg/kg/day	1 EPA	5.00E-03	mg/kg/day	---	---		

Notes:

--- Not Available or no value

(1) References for oral absorption efficiency are presented below.

EPA - Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), FINAL. EPA/540/R/99/005. OSWER 9285.7-02EP.

(2) Dermal RfD values were calculated by multiplying the oral RfD by the Oral Absorption Efficiency for Dermal.

(3) References for RfD:

IRIS: U.S. Environmental Protection Agency (USEPA). Office of Health and Environmental Assessment. Environmental Criteria and Assessment Office. Integrated Risk Information System (IRIS). Cincinnati, OH.

PPRTV: Provisional Toxicity value as defined in RSL Table (November 2010).

TABLE 5.2
NON-CANCER TOXICITY DATA – INHALATION
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Chemical of Potential Concern	Chronic/Subchronic	Inhalation RFC		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RFC : Target Organ(s)	
		Value	Units			Source(s) (1)	Date (MM/DD/YYYY)
Volatile Organics							
1,1,2-Trichloroethane	Chronic	---	ug/m ³	---	---	---	
1,1-Dichloroethane	Chronic	---	ug/m ³	---	---	---	
1,1-Dichloroethene	Chronic	2.0E+02	ug/m ³	Liver	30/1	IRIS	8/13/2002
1,2,4-Trichlorobenzene	Chronic	2.0E+00	ug/m ³	Urinary Tract	3000/1	PPRTV	
1,2-Dichloroethane	Chronic	2.4E+03	ug/m ³	---	---	ATSDR	
1,2-Dichloropropane	Chronic	4.0E+00	ug/m ³	Nasal	300/1	ATSDR	12/1/1991
1,4-Dioxane	Chronic	3.6E+03	ug/m ³	---	---	ATSDR	
Acetone	Chronic	3.1E+04	ug/m ³	---	---	ATSDR	
Benzene	Chronic	3.0E+01	ug/m ³	Blood	300/1	IRIS	4/17/2003
Bromodichloromethane	Chronic	---	ug/m ³	---	---	---	
Chlorobenzene	Chronic	5.0E+01	ug/m ³	Liver; Kidney	1000/1	PPRTV	
Chloroform	Chronic	9.8E+01	ug/m ³	---	---	ATSDR	
cis-1,2-Dichloroethene	Chronic	---	ug/m ³	---	---	---	
Dibromochloromethane	Chronic	---	ug/m ³	---	---	---	
Ethylbenzene	Chronic	1.0E+03	ug/m ³	Development	300/1	IRIS	3/1/1991
Methyl Cyclohexane	Chronic	---	ug/m ³	---	---	---	
Methylene Chloride	Chronic	1.0E+03	ug/m ³	---	---	ATSDR	
Tetrachloroethene	Chronic	4.0E+01	ug/m ³	Neurological	1000/1	IRIS	2/10/2012
Trichloroethene	Chronic	2.0E+00	ug/m ³	Thymus; Heart	10/1	IRIS	9/28/2011
Vinyl Chloride	Chronic	1.0E+02	ug/m ³	Liver	30/1	IRIS	8/7/2000
Semivolatile Organics							
Bis(2-Ethylhexyl) Phthalate	Chronic	---	ug/m ³	---	---	---	
Inorganics							
Aluminum	Chronic	5.0E+00	ug/m ³	Neurological	300/1	PPRTV	
Antimony	Chronic	---	ug/m ³	---	---		
Arsenic	Chronic	1.5E-02	ug/m ³	---	---	CalEPA	3/3/2011
Cadmium	Chronic	1.0E-02	ug/m ³	---	---	ATSDR	
Chromium ⁺³	Chronic	---	ug/m ³	---	---		
Chromium ⁺⁶	Chronic	1.0E-01	ug/m ³	Lungs	300/1	IRIS	9/3/1998
Cobalt	Chronic	6.0E-03	ug/m ³	Lungs	300/1	PPRTV	
Iron	Chronic	---	ug/m ³				
Manganese	Chronic	5.0E-02	ug/m ³	CNS	1000/1	IRIS	12/1/1993
Mercury	Chronic	3.0E-01	ug/m ³	CNS	30/1	IRIS	6/1/1995
Vanadium	Chronic	1.0E-01	ug/m ³	---	---	ATSDR	

Notes:

--- Not available or no value

(1) References for RFC:

ATSDR: Agency for Toxic Substance and Disease Registry

CalEPA: California Environmental Protection Agency

IRIS: U.S. Environmental Protection Agency (USEPA). Office of Health and Environmental Assessment. Environmental Criteria and Assessment Office.

Integrated Risk Information System (IRIS). Cincinnati, OH.

PPRTV: U.S. Environmental Protection Agency (USEPA). Provisional Peer Reviewed Toxicity Values.

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal	Absorbed Cancer Slope Factor for Dermal		Weight of Evidence/Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s) (1)	Date (MM/DD/YYYY)
<i>Volatile Organics</i>								
1,1,2-Trichloroethane	5.7E-02	(mg/kg-day) ⁻¹	1 EPA	5.7E-02	(mg/kg-day) ⁻¹	C	IRIS	2/1/1994
1,1-Dichloroethane	5.7E-03	(mg/kg-day) ⁻¹	1 EPA	5.7E-03	(mg/kg-day) ⁻¹	C	CalEPA	9/1/2003
1,1-Dichloroethene	---	(mg/kg-day) ⁻¹	1 EPA	---	(mg/kg-day) ⁻¹	C	IRIS	8/13/2002
1,2,4-Trichlorobenzene	2.9E-02	(mg/kg-day) ⁻¹	1 EPA	2.9E-02	(mg/kg-day) ⁻¹		PPRTV	
1,2-Dichloroethane	9.1E-02	(mg/kg-day) ⁻¹	1 EPA	9.1E-02	(mg/kg-day) ⁻¹	B2	IRIS	1/1/1991
1,2-Dichloropropane	3.6E-02	(mg/kg-day) ⁻¹	1 EPA	3.6E-02	(mg/kg-day) ⁻¹	B2	CALEPA	4/30/2002
1,4-Dioxane	1.0E-01	(mg/kg-day) ⁻¹	1 EPA	1.0E-01	(mg/kg-day) ⁻¹		IRIS	8/11/2010
Acetone	---	(mg/kg-day) ⁻¹	1 EPA	---	(mg/kg-day) ⁻¹			
Benzene	5.5E-02	(mg/kg-day) ⁻¹	1 EPA	5.5E-02	(mg/kg-day) ⁻¹	A	IRIS	1/19/2000
Bromodichloromethane	6.2E-02	(mg/kg-day) ⁻¹	1 EPA	6.2E-02	(mg/kg-day) ⁻¹	B2	IRIS	3/1/1993
Chlorobenzene	---	(mg/kg-day) ⁻¹	1 EPA	---	(mg/kg-day) ⁻¹	D	IRIS	3/1/1991
Chloroform	3.1E-02	(mg/kg-day) ⁻¹	1 EPA	3.1E-02	(mg/kg-day) ⁻¹	B2	CalEPA	10/19/2001
cis-1,2-Dichloroethene	---	(mg/kg-day) ⁻¹	1 EPA	---	(mg/kg-day) ⁻¹	D	IRIS	2/1/1995
Dibromochloromethane	8.4E-02	(mg/kg-day) ⁻¹	1 EPA	1.4E-01	(mg/kg-day) ⁻¹	C	IRIS	1/1/1992
Ethylbenzene	1.1E-02	(mg/kg-day) ⁻¹	1 EPA	1.1E-02	(mg/kg-day) ⁻¹	D	CalEPA	8/1/1991
Methyl Cyclohexane	---	(mg/kg-day) ⁻¹	1 EPA	---	(mg/kg-day) ⁻¹			
Methylene Chloride	7.5E-03	(mg/kg-day) ⁻¹	1 EPA	7.5E-03	(mg/kg-day) ⁻¹	B2	IRIS	2/1/1995
Tetrachloroethylene	2.1E-03	(mg/kg-day) ⁻¹	1 EPA	2.1E-03	(mg/kg-day) ⁻¹		IRIS	2/10/2012
Trichloroethylene	4.6E-02	(mg/kg-day) ⁻¹	1 EPA	4.6E-02	(mg/kg-day) ⁻¹		IRIS	9/28/2011
Vinyl Chloride	7.2E-01	(mg/kg-day) ⁻¹	1 EPA	7.2E-01	(mg/kg-day) ⁻¹	A	IRIS	8/7/2000
<i>Semivolatile Organics</i>								
Bis(2-Ethylhexyl) Phthalate	1.4E-02	(mg/kg-day) ⁻¹	1 EPA	1.4E-02	(mg/kg-day) ⁻¹	B2	IRIS	2/1/1993
<i>Inorganics</i>								
Aluminum	---	(mg/kg-day) ⁻¹	1 EPA	---	(mg/kg-day) ⁻¹	---		
Antimony	---	(mg/kg-day) ⁻¹	1 EPA	---	(mg/kg-day) ⁻¹			
Arsenic	1.5E+00	(mg/kg-day) ⁻¹	1 EPA	1.5E+00	(mg/kg-day) ⁻¹	A	IRIS	4/10/1998
Cadmium	---	(mg/kg-day) ⁻¹	0.05 EPA	---	(mg/kg-day) ⁻¹	B1	IRIS	6/1/1992
Chromium ⁺³	---	(mg/kg-day) ⁻¹	0.013 EPA	---	(mg/kg-day) ⁻¹	D	IRIS	9/3/1998
Chromium ⁺⁶	5.0E-01	(mg/kg-day) ⁻¹	0.025 EPA	2.0E+01	(mg/kg-day) ⁻¹	(2)	NJDEP	4/8/2009
Cobalt	---	(mg/kg-day) ⁻¹	1 EPA	---	(mg/kg-day) ⁻¹	---		
Iron	---	(mg/kg-day) ⁻¹	1 EPA	---	(mg/kg-day) ⁻¹	---		
Manganese	---	(mg/kg-day) ⁻¹	0.04 EPA	---	(mg/kg-day) ⁻¹	D	IRIS	12/1/1996
Mercury	---	(mg/kg-day) ⁻¹	1 EPA	---	(mg/kg-day) ⁻¹	D	IRIS	5/1/1995
Vanadium	---	(mg/kg-day) ⁻¹	0.026 EPA	---	(mg/kg-day) ⁻¹	---		

Notes:

--- Not Available or no value

(1) References for Oral CSF are:

IRIS: U.S. Environmental Protection Agency (USEPA). Office of Health and Environmental Assessment. Environmental Criteria and Assessment Office. Integrated Risk Information System (IRIS). Cincinnati, OH.

PPRTV: U.S. Environmental Protection Agency (USEPA). Provisional Peer Reviewed Toxicity Values.

CalEPA: California Environmental Protection Agency. Toxicity Values.

NJDEP: New Jersey Department of Environmental Protection.

(2) NJDEP has classified hexavalent chromium as 'likely to be carcinogenic' via oral exposure using USEPA's *Guidelines for Carcinogen Risk Assessment* (2005)

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Chemical of Potential Concern	Unit Risk		Weight of Evidence/Cancer Guideline Description	Unit Risk : Inhalation CSF	
	Value	Units		Source(s) (1)	Date (MM/DD/YYYY)
<i>Volatile Organics</i>					
1,1,2-Trichloroethane	1.6E-05	(ug/m ³) ⁻¹	C	IRIS	2/1/1994
1,1-Dichloroethane	1.6E-06	(ug/m ³) ⁻¹	C	CalEPA	12/1/1996
1,1-Dichloroethene	---	(ug/m ³) ⁻¹	C	IRIS	8/13/2002
1,2,4-Trichlorobenzene	---	(ug/m ³) ⁻¹	D	IRIS	3/1/1991
1,2-Dichloroethane	2.6E-05	(ug/m ³) ⁻¹	B2	IRIS	1/1/1991
1,2-Dichloropropane	1.0E-05	(ug/m ³) ⁻¹		CalEPA	4/30/2002
1,4-Dioxane	7.7E-06	(ug/m ³) ⁻¹		CalEPA	2/1/2009
Acetone	---	(ug/m ³) ⁻¹	---		
Benzene	7.8E-06	(ug/m ³) ⁻¹	A	IRIS	1/19/2000
Bromodichloromethane	3.7E-05	(ug/m ³) ⁻¹		CalEPA	2/1/2009
Chlorobenzene	---	(ug/m ³) ⁻¹	D	IRIS	3/1/1991
Chloroform	2.3E-05	(ug/m ³) ⁻¹	B2	IRIS	10/19/2001
cis-1,2-Dichloroethene	---	(ug/m ³) ⁻¹	D	IRIS	2/1/1995
Dibromochloromethane	2.7E-05	(ug/m ³) ⁻¹		CalEPA	4/1/1992
Ethylbenzene	2.5E-06	(ug/m ³) ⁻¹		CalEPA	11/14/2007
Methyl Cyclohexane	---	(ug/m ³) ⁻¹	---		
Methylene Chloride	4.7E-07	(ug/m ³) ⁻¹	B2	IRIS	2/1/1995
Tetrachloroethene	2.6E-07	(ug/m ³) ⁻¹		IRIS	2/10/2012
Trichloroethene	4.1E-06	(ug/m ³) ⁻¹		IRIS	9/28/2011
Vinyl Chloride	4.4E-06	(ug/m ³) ⁻¹	A	IRIS	8/7/2000
<i>Semivolatile Organics</i>					
Bis(2-Ethylhexyl) Phthalate	2.4E-06	(ug/m ³) ⁻¹		CalEPA	3/3/2011
<i>Inorganics</i>					
Aluminum	---	(ug/m ³) ⁻¹			
Antimony	---	(ug/m ³) ⁻¹			
Arsenic	4.3E-03	(ug/m ³) ⁻¹	A	IRIS	4/10/1998
Cadmium	1.8E-03	(ug/m ³) ⁻¹	B1	IRIS	6/1/1992
Chromium ⁺³	---	(ug/m ³) ⁻¹			
Chromium ⁺⁶	8.4E-02	(ug/m ³) ⁻¹	A	IRIS	9/3/1998
Cobalt	9.0E-03	(ug/m ³) ⁻¹	---	PPRTV	
Iron	---	(ug/m ³) ⁻¹	---		
Manganese	---	(ug/m ³) ⁻¹			
Mercury	---	(ug/m ³) ⁻¹			
Vanadium	---	(ug/m ³) ⁻¹			

Notes:

--- = Not Applicable or no value

(1) References for UR:

CalEPA: California Environmental Protection Agency

IRIS: U.S. Environmental Protection Agency (USEPA). Office of Health and Environmental Assessment. Environmental Criteria and Assessment Office. Integrated Risk Information System (IRIS). Cincinnati, OH.

PPRTV: U.S. Environmental Protection Agency (USEPA). Provisional Peer Reviewed Toxicity Values.

TABLE 7.1 RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Bedrock/Till Groundwater	Tap Water	Tap Water	Ingestion	Aluminum	3.0E+03	ug/L	3.5E-02	mg/kg/day	---	(mg/kg/day) ⁻¹	---	8.2E-02	mg/kg/day	1.0E+00	mg/kg/day	8.2E-02
				Antimony	1.5E+00	ug/L	1.8E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	4.1E-05	mg/kg/day	4.0E-04	mg/kg/day	1.0E-01
				Arsenic	1.8E+00	ug/L	2.1E-05	mg/kg/day	1.5E+00	(mg/kg/day) ⁻¹	3.1E-05	4.9E-05	mg/kg/day	3.0E-04	mg/kg/day	1.6E-01
				Cadmium	7.1E-01	ug/L	8.3E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.9E-05	mg/kg/day	5.0E-04	mg/kg/day	3.9E-02
				Chromium ⁺³	7.1E+01	ug/L	8.4E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.0E-03	mg/kg/day	1.5E+00	mg/kg/day	1.3E-03
				Chromium ⁺⁶	5.5E+00	ug/L	6.5E-05	mg/kg/day	5.0E-01	(mg/kg/day) ⁻¹	3.2E-05	1.5E-04	mg/kg/day	3.0E-03	mg/kg/day	5.0E-02
				Cobalt	6.4E+00	ug/L	7.5E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.7E-04	mg/kg/day	3.0E-04	mg/kg/day	5.8E-01
				Iron	5.0E+03	ug/L	5.9E-02	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.4E-01	mg/kg/day	7.0E-01	mg/kg/day	2.0E-01
				Manganese	1.3E+02	ug/L	1.5E-03	mg/kg/day	---	(mg/kg/day) ⁻¹	---	3.5E-03	mg/kg/day	2.4E-02	mg/kg/day	1.5E-01
				Mercury	1.5E-01	ug/L	1.8E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	4.1E-06	mg/kg/day	1.6E-04	mg/kg/day	2.6E-02
				Vanadium	1.8E+01	ug/L	2.1E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	4.9E-04	mg/kg/day	5.0E-03	mg/kg/day	9.8E-02
				Bis(2-Ethylhexyl) Phthalate	4.7E+00	ug/L	5.5E-05	mg/kg/day	1.4E-02	(mg/kg/day) ⁻¹	7.8E-07	1.3E-04	mg/kg/day	2.0E-02	mg/kg/day	6.5E-03
				1,1,2-Trichloroethane	8.3E-01	ug/L	9.7E-06	mg/kg/day	5.7E-02	(mg/kg/day) ⁻¹	5.5E-07	2.3E-05	mg/kg/day	--	mg/kg/day	--
				1,1-Dichloroethane	9.1E+01	ug/L	1.1E-03	mg/kg/day	5.7E-03	(mg/kg/day) ⁻¹	6.1E-06	2.5E-03	mg/kg/day	--	mg/kg/day	--
				1,1-Dichloroethene	2.4E+01	ug/L	2.9E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	6.7E-04	mg/kg/day	5.0E-02	mg/kg/day	1.3E-02
				1,2,4-Trichlorobenzene	1.1E+01	ug/L	1.3E-04	mg/kg/day	2.9E-02	(mg/kg/day) ⁻¹	3.7E-06	3.0E-04	mg/kg/day	1.0E-02	mg/kg/day	3.0E-02
				1,2-Dichloroethane	1.1E+01	ug/L	1.3E-04	mg/kg/day	9.1E-02	(mg/kg/day) ⁻¹	1.2E-05	3.1E-04	mg/kg/day	2.0E-02	mg/kg/day	1.5E-02
				1,2-Dichloropropane	9.7E-01	ug/L	1.1E-05	mg/kg/day	3.6E-02	(mg/kg/day) ⁻¹	4.1E-07	2.7E-05	mg/kg/day	9.0E-02	mg/kg/day	3.0E-04
				1,4-Dioxane	2.0E+03	ug/L	2.3E-02	mg/kg/day	1.0E-01	(mg/kg/day) ⁻¹	2.3E-03	5.4E-02	mg/kg/day	3.0E-02	mg/kg/day	1.8E+00
				Acetone	3.6E+02	ug/L	4.2E-03	mg/kg/day	---	(mg/kg/day) ⁻¹	---	9.8E-03	mg/kg/day	9.0E-01	mg/kg/day	1.1E-02
				Benzene	6.0E+01	ug/L	7.0E-04	mg/kg/day	5.5E-02	(mg/kg/day) ⁻¹	3.8E-05	1.6E-03	mg/kg/day	4.0E-03	mg/kg/day	4.1E-01
				Bromodichlormethane	1.7E+00	ug/L	2.1E-05	mg/kg/day	6.2E-02	(mg/kg/day) ⁻¹	1.3E-06	4.8E-05	mg/kg/day	2.0E-02	mg/kg/day	2.4E-03
				Chlorobenzene	2.3E+00	ug/L	2.7E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	6.4E-05	mg/kg/day	2.0E-02	mg/kg/day	3.2E-03
				Chloroform	1.8E+01	ug/L	2.2E-04	mg/kg/day	3.1E-02	(mg/kg/day) ⁻¹	6.7E-06	5.1E-04	mg/kg/day	1.0E-02	mg/kg/day	5.1E-02
				Cis-1,2-Dichloroethene	2.3E+02	ug/L	2.8E-03	mg/kg/day	---	(mg/kg/day) ⁻¹	---	6.4E-03	mg/kg/day	2.0E-03	mg/kg/day	3.2E+00
				Dibromochlormethane	6.8E-01	ug/L	8.0E-06	mg/kg/day	8.4E-02	(mg/kg/day) ⁻¹	6.7E-07	1.9E-05	mg/kg/day	2.0E-02	mg/kg/day	9.3E-04
				Ethylbenzene	8.8E-01	ug/L	1.0E-05	mg/kg/day	1.1E-02	(mg/kg/day) ⁻¹	1.1E-07	2.4E-05	mg/kg/day	1.0E-01	mg/kg/day	2.4E-04
				Methyl Cyclohexane	2.8E-01	ug/L	3.3E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	7.8E-06	mg/kg/day	--	mg/kg/day	--
				Methylene Chloride	4.9E-01	ug/L	5.8E-06	mg/kg/day	7.5E-03	(mg/kg/day) ⁻¹	4.3E-08	1.3E-05	mg/kg/day	6.0E-02	mg/kg/day	2.2E-04
				Tetrachloroethene	2.2E+02	ug/L	2.5E-03	mg/kg/day	2.1E-03	(mg/kg/day) ⁻¹	5.3E-06	5.9E-03	mg/kg/day	6.0E-03	mg/kg/day	9.8E-01
				Trichloroethene	7.4E+02	ug/L	8.6E-03	mg/kg/day	4.6E-02	(mg/kg/day) ⁻¹	4.0E-04	2.0E-02	mg/kg/day	5.0E-04	mg/kg/day	4.0E+01
				Vinyl Chloride	1.2E+01	ug/L	1.4E-04	mg/kg/day	7.2E-01	(mg/kg/day) ⁻¹	9.8E-05	3.2E-04	mg/kg/day	3.0E-03	mg/kg/day	1.1E-01
Exp. Route Total												2.9E-03			4.8E+01	

TABLE 7.1 RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations						Non-Cancer Hazard Calculations						
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD		Hazard Quotient			
							Value	Units	Value	Units		Value	Units	Value	Units				
Bedrock/Till Groundwater	Tap Water	Tap Water	Dermal	Aluminum	3.0E+03	ug/L	7.9E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.8E-04	mg/kg/day	1.0E+00	mg/kg/day	1.8E-04			
				Antimony	1.5E+00	ug/L	4.0E-08	mg/kg/day	---	(mg/kg/day) ⁻¹	---	9.3E-08	mg/kg/day	6.0E-05	mg/kg/day	1.5E-03			
				Arsenic	1.8E+00	ug/L	4.7E-08	mg/kg/day	1.5E+00	(mg/kg/day) ⁻¹	7.1E-08	1.1E-07	mg/kg/day	3.0E-04	mg/kg/day	3.7E-04			
				Cadmium	7.1E-01	ug/L	1.9E-08	mg/kg/day	---	(mg/kg/day) ⁻¹	---	4.4E-08	mg/kg/day	2.5E-05	mg/kg/day	1.7E-03			
				Chromium ⁺³	7.1E+01	ug/L	1.9E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	4.4E-06	mg/kg/day	2.0E-02	mg/kg/day	2.3E-04			
				Chromium ⁺⁶	5.5E+00	ug/L	1.5E-07	mg/kg/day	2.0E+01	(mg/kg/day) ⁻¹	2.9E-06	3.4E-07	mg/kg/day	7.5E-05	mg/kg/day	4.5E-03			
				Cobalt	6.4E+00	ug/L	1.7E-07	mg/kg/day	---	(mg/kg/day) ⁻¹	---	3.9E-07	mg/kg/day	3.0E-04	mg/kg/day	1.3E-03			
				Iron	5.0E+03	ug/L	1.3E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	3.1E-04	mg/kg/day	7.0E-01	mg/kg/day	4.4E-04			
				Manganese	1.3E+02	ug/L	3.4E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	8.0E-06	mg/kg/day	9.6E-04	mg/kg/day	8.3E-03			
				Mercury	1.5E-01	ug/L	4.0E-09	mg/kg/day	---	(mg/kg/day) ⁻¹	---	9.2E-09	mg/kg/day	1.6E-04	mg/kg/day	5.8E-05			
				Vanadium	1.8E+01	ug/L	4.7E-07	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.1E-06	mg/kg/day	5.0E-03	mg/kg/day	2.2E-04			
				Bis(2-Ethylhexyl) Phthalate	4.7E+00	ug/L	5.6E-05	mg/kg/day	1.4E-02	(mg/kg/day) ⁻¹	7.9E-07	1.3E-04	mg/kg/day	2.0E-02	mg/kg/day	6.6E-03			
				1,1,2-Trichloroethane	8.3E-01	ug/L	6.0E-07	mg/kg/day	5.7E-02	(mg/kg/day) ⁻¹	3.4E-08	1.4E-06	mg/kg/day	4.0E-03	mg/kg/day	3.5E-04			
				1,1-Dichloroethane	9.1E+01	ug/L	5.5E-05	mg/kg/day	5.7E-03	(mg/kg/day) ⁻¹	3.1E-07	1.3E-04	mg/kg/day	2.0E-01	mg/kg/day	6.4E-04			
				1,1-Dichloroethene	2.4E+01	ug/L	2.6E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	6.0E-05	mg/kg/day	5.0E-02	mg/kg/day	1.2E-03			
				1,2,4-Trichlorobenzene	1.1E+01	ug/L	1.1E-04	mg/kg/day	2.9E-02	(mg/kg/day) ⁻¹	3.2E-06	2.6E-04	mg/kg/day	1.0E-02	mg/kg/day	2.6E-02			
				1,2-Dichloroethane	1.1E+01	ug/L	4.3E-06	mg/kg/day	9.1E-02	(mg/kg/day) ⁻¹	3.9E-07	9.9E-06	mg/kg/day	2.0E-02	mg/kg/day	5.0E-04			
				1,2-Dichloropropane	9.7E-01	ug/L	7.5E-07	mg/kg/day	3.6E-02	(mg/kg/day) ⁻¹	2.7E-08	1.8E-06	mg/kg/day	9.0E-02	mg/kg/day	2.0E-05			
				1,4-Dioxane	2.0E+03	ug/L	5.4E-05	mg/kg/day	1.0E-01	(mg/kg/day) ⁻¹	5.4E-06	1.3E-04	mg/kg/day	3.0E-02	mg/kg/day	4.2E-03			
				Acetone	3.6E+02	ug/L	---	mg/kg/day	---	(mg/kg/day) ⁻¹	---	---	mg/kg/day	9.0E-01	mg/kg/day	---			
				Benzene	6.0E+01	ug/L	7.0E-05	mg/kg/day	5.5E-02	(mg/kg/day) ⁻¹	3.9E-06	1.6E-04	mg/kg/day	4.0E-03	mg/kg/day	4.1E-02			
				Bromodichloromethane	1.7E+00	ug/L	1.1E-06	mg/kg/day	6.2E-02	(mg/kg/day) ⁻¹	6.8E-08	2.6E-06	mg/kg/day	2.0E-02	mg/kg/day	1.3E-04			
				Chlorobenzene	2.3E+00	ug/L	6.5E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.5E-05	mg/kg/day	2.0E-02	mg/kg/day	7.6E-04			
				Chloroform	1.8E+01	ug/L	1.3E-05	mg/kg/day	3.1E-02	(mg/kg/day) ⁻¹	4.0E-07	3.0E-05	mg/kg/day	1.0E-02	mg/kg/day	3.0E-03			
				Cis-1,2-Dichloroethene	2.3E+02	ug/L	1.6E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	3.7E-04	mg/kg/day	2.0E-03	mg/kg/day	1.9E-01			
				Dibromochloromethane	6.8E-01	ug/L	---	mg/kg/day	1.4E-01	(mg/kg/day) ⁻¹	---	---	mg/kg/day	2.0E-02	mg/kg/day	---			
				Ethylbenzene	8.8E-01	ug/L	4.1E-06	mg/kg/day	1.1E-02	(mg/kg/day) ⁻¹	4.5E-08	9.5E-06	mg/kg/day	1.0E-01	mg/kg/day	9.5E-05			
				Methyl Cyclohexane	2.8E-01	ug/L	---	mg/kg/day	---	(mg/kg/day) ⁻¹	---	---	mg/kg/day	---	mg/kg/day	---			
				Methylene Chloride	4.9E-01	ug/L	1.4E-07	mg/kg/day	7.5E-03	(mg/kg/day) ⁻¹	1.1E-09	3.3E-07	mg/kg/day	6.0E-02	mg/kg/day	5.5E-06			
				Tetrachloroethene	2.2E+02	ug/L	9.9E-04	mg/kg/day	2.1E-03	(mg/kg/day) ⁻¹	2.1E-06	2.3E-03	mg/kg/day	6.0E-03	mg/kg/day	3.8E-01			
				Trichloroethene	7.4E+02	ug/L	9.8E-04	mg/kg/day	4.6E-02	(mg/kg/day) ⁻¹	4.5E-05	2.3E-03	mg/kg/day	5.0E-04	mg/kg/day	4.6E-03			
				Vinyl Chloride	1.2E+01	ug/L	4.6E-06	mg/kg/day	7.2E-01	(mg/kg/day) ⁻¹	3.3E-06	1.1E-05	mg/kg/day	3.0E-03	mg/kg/day	3.6E-03			
Exp. Route Total												6.8E-05				5.3E+00			
Exposure Point Total												3.0E-03				5.4E+01			

TABLE 7.1 RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Bedrock/Till Groundwater	Tap Water	Water Vapors	Inhalation	Bis(2-Ethylhexyl) Phthalate	9.8E-07	ug/m ³	9.7E-09	ug/m ³	2.4E-06	(ug/m ³) ⁻¹	2.3E-14	2.3E-08	ug/m ³	---	ug/m ³	---
				1,1,2-Trichloroethane	1.3E-05	ug/m ³	1.2E-07	ug/m ³	---	(ug/m ³) ⁻¹	---	2.9E-07	ug/m ³	---	ug/m ³	---
				1,1-Dichloroethane	1.6E-03	ug/m ³	1.6E-05	ug/m ³	1.6E-06	(ug/m ³) ⁻¹	2.5E-11	3.7E-05	ug/m ³	---	ug/m ³	---
				1,1-Dichloroethene	4.4E-04	ug/m ³	4.4E-06	ug/m ³	---	(ug/m ³) ⁻¹	---	1.0E-05	ug/m ³	2.0E+02	ug/m ³	5.1E-08
				1,2,4-Trichlorobenzene	1.6E-04	ug/m ³	1.6E-06	ug/m ³	---	(ug/m ³) ⁻¹	---	3.7E-06	ug/m ³	2.0E+00	ug/m ³	1.8E-06
				1,2-Dichloroethane	2.0E-04	ug/m ³	2.0E-06	ug/m ³	2.6E-05	(ug/m ³) ⁻¹	5.1E-11	4.6E-06	ug/m ³	2.4E+03	ug/m ³	1.9E-09
				1,2-Dichloropropane	1.6E-05	ug/m ³	1.6E-07	ug/m ³	1.0E-05	(ug/m ³) ⁻¹	1.6E-12	3.7E-07	ug/m ³	4.0E+00	ug/m ³	9.2E-08
				1,4-Dioxane	5.7E-03	ug/m ³	5.6E-05	ug/m ³	7.7E-06	(ug/m ³) ⁻¹	4.3E-10	1.3E-04	ug/m ³	3.6E+03	ug/m ³	3.7E-08
				Acetone	4.0E-03	ug/m ³	4.0E-05	ug/m ³	---	(ug/m ³) ⁻¹	---	9.4E-05	ug/m ³	3.1E+04	ug/m ³	3.0E-09
				Benzene	1.0E-03	ug/m ³	1.0E-05	ug/m ³	7.8E-06	(ug/m ³) ⁻¹	7.8E-11	2.3E-05	ug/m ³	3.0E+01	ug/m ³	7.8E-07
				Bromodichlormethane	3.1E-05	ug/m ³	3.0E-07	ug/m ³	3.7E-05	(ug/m ³) ⁻¹	1.1E-11	7.1E-07	ug/m ³	---	ug/m ³	---
				Chlorobenzene	3.8E-05	ug/m ³	3.8E-07	ug/m ³	---	(ug/m ³) ⁻¹	---	8.8E-07	ug/m ³	5.0E+01	ug/m ³	1.8E-08
				Chloroform	3.3E-04	ug/m ³	3.3E-06	ug/m ³	2.3E-05	(ug/m ³) ⁻¹	7.6E-11	7.7E-06	ug/m ³	9.8E+01	ug/m ³	7.8E-08
				Cis-1,2-Dichloroethene	4.3E-03	ug/m ³	4.3E-05	ug/m ³	---	(ug/m ³) ⁻¹	---	1.0E-04	ug/m ³	---	ug/m ³	---
				Dibromochlormethane	1.1E-05	ug/m ³	1.1E-07	ug/m ³	2.7E-05	(ug/m ³) ⁻¹	3.0E-12	2.6E-07	ug/m ³	---	ug/m ³	---
				Ethylbenzene	1.3E-05	ug/m ³	1.3E-07	ug/m ³	2.5E-06	(ug/m ³) ⁻¹	3.3E-13	3.1E-07	ug/m ³	1.0E+03	ug/m ³	3.1E-10
				Methyl Cyclohexane	---	ug/m ³	---	ug/m ³	---	(ug/m ³) ⁻¹	---	---	ug/m ³	---	ug/m ³	---
				Methylene Chloride	9.6E-06	ug/m ³	9.6E-08	ug/m ³	4.7E-07	(ug/m ³) ⁻¹	4.5E-14	2.2E-07	ug/m ³	1.0E+03	ug/m ³	2.2E-10
				Tetrachloroethene	3.5E-03	ug/m ³	3.5E-05	ug/m ³	2.6E-07	(ug/m ³) ⁻¹	9.1E-12	8.2E-05	ug/m ³	4.0E+01	ug/m ³	2.0E-06
				Trichloroethene	1.2E-02	ug/m ³	1.2E-04	ug/m ³	4.1E-06	(ug/m ³) ⁻¹	5.1E-10	2.9E-04	ug/m ³	2.0E+00	ug/m ³	1.4E-04
				Vinyl Chloride	2.3E-04	ug/m ³	2.2E-06	ug/m ³	4.4E-06	(ug/m ³) ⁻¹	9.8E-12	5.2E-06	ug/m ³	1.0E+02	ug/m ³	5.2E-08
				Exp. Route Total					1.2E-09							1.5E-04
				Exposure Point Total					1.2E-09							1.5E-04
				Exposure Medium Total					3.0E-03							5.4E+01
Medium and Receptor Total					3.0E-03											5.4E+01

TABLE 7.1 CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Bedrock/Till Groundwater	Tap Water	Tap Water	Ingestion	Aluminum	3.0E+03	ug/L	5.3E-03	mg/kg/day	---	(mg/kg/day) ⁻¹	---	4.1E-02	mg/kg/day	1.0E+00	mg/kg/day	4.1E-02
				Antimony	1.5E+00	ug/L	2.6E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.1E-05	mg/kg/day	4.0E-04	mg/kg/day	5.1E-02
				Arsenic	1.8E+00	ug/L	3.1E-06	mg/kg/day	1.5E+00	(mg/kg/day) ⁻¹	4.7E-06	2.4E-05	mg/kg/day	3.0E-04	mg/kg/day	8.2E-02
				Cadmium	7.1E-01	ug/L	1.2E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	9.7E-06	mg/kg/day	5.0E-04	mg/kg/day	1.9E-02
				Chromium ⁺³	7.1E+01	ug/L	1.3E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	9.8E-04	mg/kg/day	1.5E+00	mg/kg/day	6.5E-04
				Chromium ⁺⁶	5.5E+00	ug/L	9.7E-06	mg/kg/day	5.0E-01	(mg/kg/day) ⁻¹	4.9E-06	7.6E-05	mg/kg/day	3.0E-03	mg/kg/day	2.5E-02
				Cobalt	6.4E+00	ug/L	1.1E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	8.7E-05	mg/kg/day	3.0E-04	mg/kg/day	2.9E-01
				Iron	5.0E+03	ug/L	8.9E-03	mg/kg/day	---	(mg/kg/day) ⁻¹	---	6.9E-02	mg/kg/day	7.0E-01	mg/kg/day	9.8E-02
				Manganese	1.3E+02	ug/L	2.3E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.8E-03	mg/kg/day	2.4E-02	mg/kg/day	7.4E-02
				Mercury	1.5E-01	ug/L	2.6E-07	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.1E-06	mg/kg/day	1.6E-04	mg/kg/day	1.3E-02
				Vanadium	1.8E+01	ug/L	3.2E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.5E-04	mg/kg/day	5.0E-03	mg/kg/day	4.9E-02
				Bis(2-Ethylhexyl) Phthalate	4.7E+00	ug/L	8.3E-06	mg/kg/day	1.4E-02	(mg/kg/day) ⁻¹	1.2E-07	6.5E-05	mg/kg/day	2.0E-02	mg/kg/day	3.2E-03
				1,1,2-Trichloroethane	8.3E-01	ug/L	1.5E-06	mg/kg/day	5.7E-02	(mg/kg/day) ⁻¹	8.3E-08	1.1E-05	mg/kg/day	--	mg/kg/day	--
				1,1-Dichloroethane	9.1E+01	ug/L	1.6E-04	mg/kg/day	5.7E-03	(mg/kg/day) ⁻¹	9.1E-07	1.2E-03	mg/kg/day	--	mg/kg/day	--
				1,1-Dichloroethene	2.4E+01	ug/L	4.3E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	3.3E-04	mg/kg/day	5.0E-02	mg/kg/day	6.7E-03
				1,2,4-Trichlorobenzene	1.1E+01	ug/L	1.9E-05	mg/kg/day	2.9E-02	(mg/kg/day) ⁻¹	5.6E-07	1.5E-04	mg/kg/day	1.0E-02	mg/kg/day	1.5E-02
				1,2-Dichloroethane	1.1E+01	ug/L	2.0E-05	mg/kg/day	9.1E-02	(mg/kg/day) ⁻¹	1.8E-06	1.5E-04	mg/kg/day	2.0E-02	mg/kg/day	7.7E-03
				1,2-Dichloropropane	9.7E-01	ug/L	1.7E-06	mg/kg/day	3.6E-02	(mg/kg/day) ⁻¹	6.2E-08	1.3E-05	mg/kg/day	9.0E-02	mg/kg/day	1.5E-04
				1,4-Dioxane	2.0E+03	ug/L	3.4E-03	mg/kg/day	1.0E-01	(mg/kg/day) ⁻¹	3.4E-04	2.7E-02	mg/kg/day	3.0E-02	mg/kg/day	8.9E-01
				Acetone	3.6E+02	ug/L	6.3E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	4.9E-03	mg/kg/day	9.0E-01	mg/kg/day	5.5E-03
				Benzene	6.0E+01	ug/L	1.0E-04	mg/kg/day	5.5E-02	(mg/kg/day) ⁻¹	5.8E-06	8.2E-04	mg/kg/day	4.0E-03	mg/kg/day	2.0E-01
				Bromodichlormethane	1.7E+00	ug/L	3.1E-06	mg/kg/day	6.2E-02	(mg/kg/day) ⁻¹	1.9E-07	2.4E-05	mg/kg/day	2.0E-02	mg/kg/day	1.2E-03
				Chlorobenzene	2.3E+00	ug/L	4.1E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	3.2E-05	mg/kg/day	2.0E-02	mg/kg/day	1.6E-03
				Chloroform	1.8E+01	ug/L	3.3E-05	mg/kg/day	3.1E-02	(mg/kg/day) ⁻¹	1.0E-06	2.5E-04	mg/kg/day	1.0E-02	mg/kg/day	2.5E-02
				Cis-1,2-Dichloroethene	2.3E+02	ug/L	4.1E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	3.2E-03	mg/kg/day	2.0E-03	mg/kg/day	1.6E+00
				Dibromochlormethane	6.8E-01	ug/L	1.2E-06	mg/kg/day	8.4E-02	(mg/kg/day) ⁻¹	1.0E-07	9.3E-06	mg/kg/day	2.0E-02	mg/kg/day	4.7E-04
				Ethylbenzene	8.8E-01	ug/L	1.5E-06	mg/kg/day	1.1E-02	(mg/kg/day) ⁻¹	1.7E-08	1.2E-05	mg/kg/day	1.0E-01	mg/kg/day	1.2E-04
				Methyl Cyclohexane	2.8E-01	ug/L	5.0E-07	mg/kg/day	---	(mg/kg/day) ⁻¹	---	3.9E-06	mg/kg/day	--	mg/kg/day	--
				Methylene Chloride	4.9E-01	ug/L	8.7E-07	mg/kg/day	7.5E-03	(mg/kg/day) ⁻¹	6.5E-09	6.7E-06	mg/kg/day	6.0E-02	mg/kg/day	1.1E-04
				Tetrachloroethene	2.2E+02	ug/L	3.8E-04	mg/kg/day	2.1E-03	(mg/kg/day) ⁻¹	8.0E-07	2.9E-03	mg/kg/day	6.0E-03	mg/kg/day	4.9E-01
				Trichloroethene	7.4E+02	ug/L	1.3E-03	mg/kg/day	4.6E-02	(mg/kg/day) ⁻¹	6.0E-05	1.0E-02	mg/kg/day	5.0E-04	mg/kg/day	2.0E+01
				Vinyl Chloride	1.2E+01	ug/L	2.0E-05	mg/kg/day	7.2E-01	(mg/kg/day) ⁻¹	1.5E-05	1.6E-04	mg/kg/day	3.0E-03	mg/kg/day	5.3E-02
Exp. Route Total												4.4E-04			2.4E+01	

TABLE 7.1 CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations						Non-Cancer Hazard Calculations						
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD		Hazard Quotient			
							Value	Units	Value	Units		Value	Units	Value	Units				
Bedrock/Till Groundwater	Tap Water	Tap Water	Dermal	Aluminum	3.0E+03	ug/L	9.5E-06	mg/kg/day	---	(mg/kg/day) ¹	---	7.4E-05	mg/kg/day	1.0E+00	mg/kg/day	7.4E-05			
				Antimony	1.5E+00	ug/L	4.8E-09	mg/kg/day	---	(mg/kg/day) ¹	---	3.7E-08	mg/kg/day	6.0E-05	mg/kg/day	6.2E-04			
				Arsenic	1.8E+00	ug/L	5.7E-09	mg/kg/day	1.5E+00	(mg/kg/day) ¹	8.5E-09	4.4E-08	mg/kg/day	3.0E-04	mg/kg/day	1.5E-04			
				Cadmium	7.1E-01	ug/L	2.2E-09	mg/kg/day	---	(mg/kg/day) ¹	---	1.7E-08	mg/kg/day	2.5E-05	mg/kg/day	7.0E-04			
				Chromium ⁺³	7.1E+01	ug/L	2.3E-07	mg/kg/day	---	(mg/kg/day) ¹	---	1.8E-06	mg/kg/day	2.0E-02	mg/kg/day	9.0E-05			
				Chromium ⁺⁶	5.5E+00	ug/L	1.8E-08	mg/kg/day	2.0E+01	(mg/kg/day) ¹	3.5E-07	1.4E-07	mg/kg/day	7.5E-05	mg/kg/day	1.8E-03			
				Cobalt	6.4E+00	ug/L	2.0E-08	mg/kg/day	---	(mg/kg/day) ¹	---	1.6E-07	mg/kg/day	3.0E-04	mg/kg/day	5.2E-04			
				Iron	5.0E+03	ug/L	1.6E-05	mg/kg/day	---	(mg/kg/day) ¹	---	1.2E-04	mg/kg/day	7.0E-01	mg/kg/day	1.8E-04			
				Manganese	1.3E+02	ug/L	4.1E-07	mg/kg/day	---	(mg/kg/day) ¹	---	3.2E-06	mg/kg/day	9.6E-04	mg/kg/day	3.3E-03			
				Mercury	1.5E-01	ug/L	4.8E-10	mg/kg/day	---	(mg/kg/day) ¹	---	3.7E-09	mg/kg/day	1.6E-04	mg/kg/day	2.3E-05			
				Vanadium	1.8E+01	ug/L	5.7E-08	mg/kg/day	---	(mg/kg/day) ¹	---	4.4E-07	mg/kg/day	5.0E-03	mg/kg/day	8.9E-05			
				Bis(2-Ethylhexyl) Phthalate	4.7E+00	ug/L	1.1E-05	mg/kg/day	1.4E-02	(mg/kg/day) ¹	1.5E-07	8.3E-05	mg/kg/day	2.0E-02	mg/kg/day	4.1E-03			
				1,1,2-Trichloroethane	8.3E-01	ug/L	1.1E-07	mg/kg/day	5.7E-02	(mg/kg/day) ¹	6.5E-09	8.8E-07	mg/kg/day	4.0E-03	mg/kg/day	2.2E-04			
				1,1-Dichloroethane	9.1E+01	ug/L	1.0E-05	mg/kg/day	5.7E-03	(mg/kg/day) ¹	5.9E-08	8.1E-05	mg/kg/day	2.0E-01	mg/kg/day	4.0E-04			
				1,1-Dichloroethene	2.4E+01	ug/L	4.9E-06	mg/kg/day	---	(mg/kg/day) ¹	---	3.8E-05	mg/kg/day	5.0E-02	mg/kg/day	7.6E-04			
				1,2,4-Trichlorobenzene	1.1E+01	ug/L	2.1E-05	mg/kg/day	2.9E-02	(mg/kg/day) ¹	6.1E-07	1.6E-04	mg/kg/day	1.0E-02	mg/kg/day	1.6E-02			
				1,2-Dichloroethane	1.1E+01	ug/L	8.1E-07	mg/kg/day	9.1E-02	(mg/kg/day) ¹	7.4E-08	6.3E-06	mg/kg/day	2.0E-02	mg/kg/day	3.1E-04			
				1,2-Dichloropropane	9.7E-01	ug/L	1.4E-07	mg/kg/day	3.6E-02	(mg/kg/day) ¹	5.1E-09	1.1E-06	mg/kg/day	9.0E-02	mg/kg/day	1.2E-05			
				1,4-Dioxane	2.0E+03	ug/L	1.0E-05	mg/kg/day	1.0E-01	(mg/kg/day) ¹	1.0E-06	8.0E-05	mg/kg/day	3.0E-02	mg/kg/day	2.7E-03			
				Acetone	3.6E+02	ug/L	---	mg/kg/day	---	(mg/kg/day) ¹	---	---	mg/kg/day	9.0E-01	mg/kg/day	---			
				Benzene	6.0E+01	ug/L	1.3E-05	mg/kg/day	5.5E-02	(mg/kg/day) ¹	7.3E-07	1.0E-04	mg/kg/day	4.0E-03	mg/kg/day	2.6E-02			
				Bromodichloromethane	1.7E+00	ug/L	2.1E-07	mg/kg/day	6.2E-02	(mg/kg/day) ¹	1.3E-08	1.6E-06	mg/kg/day	2.0E-02	mg/kg/day	8.1E-05			
				Chlorobenzene	2.3E+00	ug/L	1.2E-06	mg/kg/day	---	(mg/kg/day) ¹	---	9.6E-06	mg/kg/day	2.0E-02	mg/kg/day	4.8E-04			
				Chloroform	1.8E+01	ug/L	2.5E-06	mg/kg/day	3.1E-02	(mg/kg/day) ¹	7.6E-08	1.9E-05	mg/kg/day	1.0E-02	mg/kg/day	1.9E-03			
				Cis-1,2-Dichloroethene	2.3E+02	ug/L	3.0E-05	mg/kg/day	---	(mg/kg/day) ¹	---	2.4E-04	mg/kg/day	2.0E-03	mg/kg/day	1.2E-01			
				Dibromochloromethane	6.8E-01	ug/L	---	mg/kg/day	1.4E-01	(mg/kg/day) ¹	---	---	mg/kg/day	2.0E-02	mg/kg/day	---			
				Ethylbenzene	8.8E-01	ug/L	7.7E-07	mg/kg/day	1.1E-02	(mg/kg/day) ¹	8.5E-09	6.0E-06	mg/kg/day	1.0E-01	mg/kg/day	6.0E-05			
				Methyl Cyclohexane	2.8E-01	ug/L	---	mg/kg/day	---	(mg/kg/day) ¹	---	---	mg/kg/day	---	mg/kg/day	---			
				Methylene Chloride	4.9E-01	ug/L	2.7E-08	mg/kg/day	7.5E-03	(mg/kg/day) ¹	2.0E-10	2.1E-07	mg/kg/day	6.0E-02	mg/kg/day	3.5E-06			
				Tetrachloroethene	2.2E+02	ug/L	1.9E-04	mg/kg/day	2.1E-03	(mg/kg/day) ¹	3.9E-07	1.5E-03	mg/kg/day	6.0E-03	mg/kg/day	2.4E-01			
				Trichloroethene	7.4E+02	ug/L	1.9E-04	mg/kg/day	4.6E-02	(mg/kg/day) ¹	8.6E-06	1.4E-03	mg/kg/day	5.0E-04	mg/kg/day	2.9E+00			
				Vinyl Chloride	1.2E+01	ug/L	8.8E-07	mg/kg/day	7.2E-01	(mg/kg/day) ¹	6.3E-07	6.8E-06	mg/kg/day	3.0E-03	mg/kg/day	2.3E-03			
Exp. Route Total											1.3E-05					3.3E+00			
Exposure Point Total											4.5E-04					2.8E+01			

TABLE 7.1 CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations							
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD		Hazard Quotient			
							Value	Units	Value	Units		Value	Units	Value	Units				
Bedrock/Till Groundwater	Tap Water	Water Vapors	Inhalation	Bis(2-Ethylhexyl) Phthalate	1.6E-07	ug/m ³	2.1E-10	ug/m ³	2.4E-06	(ug/m ³) ⁻¹	5.0E-16	1.6E-09	ug/m ³	---	ug/m ³	---			
				1,1,2-Trichloroethane	2.1E-06	ug/m ³	2.7E-09	ug/m ³	---	(ug/m ³) ⁻¹	---	2.1E-08	ug/m ³	---	ug/m ³	---			
				1,1-Dichloroethane	2.7E-04	ug/m ³	3.4E-07	ug/m ³	1.6E-06	(ug/m ³) ⁻¹	5.5E-13	2.7E-06	ug/m ³	---	ug/m ³	---			
				1,1-Dichloroethene	7.3E-05	ug/m ³	9.4E-08	ug/m ³	---	(ug/m ³) ⁻¹	---	7.3E-07	ug/m ³	2.0E+02	ug/m ³	3.7E-09			
				1,2,4-Trichlorobenzene	2.6E-05	ug/m ³	3.4E-08	ug/m ³	---	(ug/m ³) ⁻¹	---	2.6E-07	ug/m ³	2.0E+00	ug/m ³	1.3E-07			
				1,2-Dichloroethane	3.3E-05	ug/m ³	4.3E-08	ug/m ³	2.6E-05	(ug/m ³) ⁻¹	1.1E-12	3.3E-07	ug/m ³	2.4E+03	ug/m ³	1.4E-10			
				1,2-Dichloropropane	2.6E-06	ug/m ³	3.4E-09	ug/m ³	1.0E-05	(ug/m ³) ⁻¹	3.4E-14	2.6E-08	ug/m ³	4.0E+00	ug/m ³	6.6E-09			
				1,4-Dioxane	9.5E-04	ug/m ³	1.2E-06	ug/m ³	7.7E-06	(ug/m ³) ⁻¹	9.4E-12	9.5E-06	ug/m ³	3.6E+03	ug/m ³	2.6E-09			
				Acetone	6.8E-04	ug/m ³	8.7E-07	ug/m ³	---	(ug/m ³) ⁻¹	---	6.8E-06	ug/m ³	3.1E+04	ug/m ³	2.2E-10			
				Benzene	1.7E-04	ug/m ³	2.2E-07	ug/m ³	7.8E-06	(ug/m ³) ⁻¹	1.7E-12	1.7E-06	ug/m ³	3.0E+01	ug/m ³	5.6E-08			
				Bromodichlormethane	5.1E-06	ug/m ³	6.6E-09	ug/m ³	3.7E-05	(ug/m ³) ⁻¹	2.4E-13	5.1E-08	ug/m ³	---	ug/m ³	---			
				Chlorobenzene	6.3E-06	ug/m ³	8.1E-09	ug/m ³	---	(ug/m ³) ⁻¹	---	6.3E-08	ug/m ³	5.0E+01	ug/m ³	1.3E-09			
				Chloroform	5.5E-05	ug/m ³	7.1E-08	ug/m ³	2.3E-05	(ug/m ³) ⁻¹	1.6E-12	5.5E-07	ug/m ³	9.8E+01	ug/m ³	5.6E-09			
				Cis-1,2-Dichloroethene	7.2E-04	ug/m ³	9.2E-07	ug/m ³	---	(ug/m ³) ⁻¹	---	7.2E-06	ug/m ³	---	ug/m ³	---			
				Dibromochlormethane	1.9E-06	ug/m ³	2.4E-09	ug/m ³	2.7E-05	(ug/m ³) ⁻¹	6.6E-14	1.9E-08	ug/m ³	---	ug/m ³	---			
				Ethylbenzene	2.2E-06	ug/m ³	2.8E-09	ug/m ³	2.5E-06	(ug/m ³) ⁻¹	7.1E-15	2.2E-08	ug/m ³	1.0E+03	ug/m ³	2.2E-11			
				Methyl Cyclohexane	---	ug/m ³	---	ug/m ³	---	(ug/m ³) ⁻¹	---	---	ug/m ³	---	ug/m ³	---			
				Methylene Chloride	1.6E-06	ug/m ³	2.1E-09	ug/m ³	4.7E-07	(ug/m ³) ⁻¹	9.7E-16	1.6E-08	ug/m ³	1.0E+03	ug/m ³	1.6E-11			
				Tetrachloroethene	5.9E-04	ug/m ³	7.5E-07	ug/m ³	2.6E-07	(ug/m ³) ⁻¹	2.0E-13	5.9E-06	ug/m ³	4.0E+01	ug/m ³	1.5E-07			
				Trichloroethene	2.1E-03	ug/m ³	2.7E-06	ug/m ³	4.1E-06	(ug/m ³) ⁻¹	1.1E-11	2.1E-05	ug/m ³	2.0E+00	ug/m ³	1.0E-05			
				Vinyl Chloride	3.8E-05	ug/m ³	4.8E-08	ug/m ³	4.4E-06	(ug/m ³) ⁻¹	2.1E-13	3.8E-07	ug/m ³	1.0E+02	ug/m ³	3.8E-09			
Exp. Route Total											2.6E-11					1.1E-05			
Exposure Point Total											2.6E-11					1.1E-05			
Exposure Medium Total											4.5E-04					2.8E+01			
Medium and Receptor Total											4.5E-04					2.8E+01			

TABLE 7.2 RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Bedrock/Till Groundwater	Tap Water	Tap Water	Ingestion	Aluminum	3.0E+03	ug/L	1.6E-02	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.9E-01	mg/kg/day	1.0E+00	mg/kg/day	1.9E-01
				Antimony	1.5E+00	ug/L	8.2E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	9.6E-05	mg/kg/day	4.0E-04	mg/kg/day	2.4E-01
				Arsenic	1.8E+00	ug/L	9.8E-06	mg/kg/day	1.5E+00	(mg/kg/day) ⁻¹	1.5E-05	1.1E-04	mg/kg/day	3.0E-04	mg/kg/day	3.8E-01
				Cadmium	7.1E-01	ug/L	3.9E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	4.5E-05	mg/kg/day	5.0E-04	mg/kg/day	9.1E-02
				Chromium ⁺³	7.1E+01	ug/L	3.9E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	4.6E-03	mg/kg/day	1.5E+00	mg/kg/day	3.0E-03
				Chromium ⁺⁶	5.5E+00	ug/L	(a)	mg/kg/day	5.0E-01	(mg/kg/day) ⁻¹	8.1E-05	3.5E-04	mg/kg/day	3.0E-03	mg/kg/day	1.2E-01
				Cobalt	6.4E+00	ug/L	3.5E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	4.1E-04	mg/kg/day	3.0E-04	mg/kg/day	1.4E+00
				Iron	5.0E+03	ug/L	2.8E-02	mg/kg/day	---	(mg/kg/day) ⁻¹	---	3.2E-01	mg/kg/day	7.0E-01	mg/kg/day	4.6E-01
				Manganese	1.3E+02	ug/L	7.1E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	8.3E-03	mg/kg/day	2.4E-02	mg/kg/day	3.4E-01
				Mercury	1.5E-01	ug/L	8.2E-07	mg/kg/day	---	(mg/kg/day) ⁻¹	---	9.6E-06	mg/kg/day	1.6E-04	mg/kg/day	6.0E-02
				Vanadium	1.8E+01	ug/L	9.8E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.1E-03	mg/kg/day	5.0E-03	mg/kg/day	2.3E-01
				Bis(2-Ethylhexyl) Phthalate	4.7E+00	ug/L	2.6E-05	mg/kg/day	1.4E-02	(mg/kg/day) ⁻¹	3.6E-07	3.0E-04	mg/kg/day	2.0E-02	mg/kg/day	1.5E-02
				1,1,2-Trichloroethane	8.3E-01	ug/L	4.5E-06	mg/kg/day	5.7E-02	(mg/kg/day) ⁻¹	2.6E-07	5.3E-05	mg/kg/day	--	mg/kg/day	--
				1,1-Dichloroethane	9.1E+01	ug/L	5.0E-04	mg/kg/day	5.7E-03	(mg/kg/day) ⁻¹	2.8E-06	5.8E-03	mg/kg/day	--	mg/kg/day	--
				1,1-Dichloroethylene	2.4E+01	ug/L	1.3E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.6E-03	mg/kg/day	5.0E-02	mg/kg/day	3.1E-02
				1,2,4-Trichlorobenzene	1.1E+01	ug/L	6.0E-05	mg/kg/day	2.9E-02	(mg/kg/day) ⁻¹	1.7E-06	7.0E-04	mg/kg/day	1.0E-02	mg/kg/day	7.0E-02
				1,2-Dichloroethane	1.1E+01	ug/L	6.2E-05	mg/kg/day	9.1E-02	(mg/kg/day) ⁻¹	5.6E-06	7.2E-04	mg/kg/day	2.0E-02	mg/kg/day	3.6E-02
				1,2-Dichloropropane	9.7E-01	ug/L	5.3E-06	mg/kg/day	3.6E-02	(mg/kg/day) ⁻¹	1.9E-07	6.2E-05	mg/kg/day	9.0E-02	mg/kg/day	6.9E-04
				1,4-Dioxane	2.0E+03	ug/L	1.1E-02	mg/kg/day	1.0E-01	(mg/kg/day) ⁻¹	1.1E-03	1.3E-01	mg/kg/day	3.0E-02	mg/kg/day	4.2E+00
				Acetone	3.6E+02	ug/L	2.0E-03	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.3E-02	mg/kg/day	9.0E-01	mg/kg/day	2.5E-02
				Benzene	6.0E+01	ug/L	3.3E-04	mg/kg/day	5.5E-02	(mg/kg/day) ⁻¹	1.8E-05	3.8E-03	mg/kg/day	4.0E-03	mg/kg/day	9.5E-01
				Bromodichloromethane	1.7E+00	ug/L	9.6E-06	mg/kg/day	6.2E-02	(mg/kg/day) ⁻¹	5.9E-07	1.1E-04	mg/kg/day	2.0E-02	mg/kg/day	5.6E-03
				Chlorobenzene	2.3E+00	ug/L	1.3E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.5E-04	mg/kg/day	2.0E-02	mg/kg/day	7.5E-03
				Chloroform	1.8E+01	ug/L	1.0E-04	mg/kg/day	3.1E-02	(mg/kg/day) ⁻¹	3.1E-06	1.2E-03	mg/kg/day	1.0E-02	mg/kg/day	1.2E-01
				Cis-1,2-Dichloroethene	2.3E+02	ug/L	1.3E-03	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.5E-02	mg/kg/day	2.0E-03	mg/kg/day	7.5E+00
				Dibromochloromethane	6.8E-01	ug/L	3.7E-06	mg/kg/day	8.4E-02	(mg/kg/day) ⁻¹	3.1E-07	4.3E-05	mg/kg/day	2.0E-02	mg/kg/day	2.2E-03
				Ethylbenzene	8.8E-01	ug/L	4.8E-06	mg/kg/day	1.1E-02	(mg/kg/day) ⁻¹	5.3E-08	5.6E-05	mg/kg/day	1.0E-01	mg/kg/day	5.6E-04
				Methyl Cyclohexane	2.8E-01	ug/L	1.6E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.8E-05	mg/kg/day	--	mg/kg/day	--
				Methylene Chloride	4.9E-01	ug/L	2.7E-06	mg/kg/day	7.5E-03	(mg/kg/day) ⁻¹	2.0E-08	3.1E-05	mg/kg/day	6.0E-02	mg/kg/day	5.2E-04
				Tetrachloroethylene	2.2E+02	ug/L	1.2E-03	mg/kg/day	2.1E-03	(mg/kg/day) ⁻¹	2.5E-06	1.4E-02	mg/kg/day	6.0E-03	mg/kg/day	2.3E+00
				Trichloroethylene	7.4E+02	ug/L	(a)	mg/kg/day	4.6E-02	(mg/kg/day) ⁻¹	9.9E-04	4.7E-02	mg/kg/day	5.0E-04	mg/kg/day	9.4E+01
				Vinyl Chloride	1.2E+01	ug/L	6.3E-05	mg/kg/day	7.2E-01	(mg/kg/day) ⁻¹	9.1E-05	7.4E-04	mg/kg/day	3.0E-03	mg/kg/day	2.5E-01
Exp. Route Total										2.3E-03				1.1E+02		

TABLE 7.2 RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				Non-Cancer Hazard Calculations							
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD		Hazard Quotient		
							Value	Units	Value	Units		Value	Units	Value	Units			
Bedrock/Till Groundwater	Tap Water	Tap Water	Dermal	Aluminum	3.0E+03	ug/L	4.9E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	5.7E-04	mg/kg/day	1.0E+00	mg/kg/day	5.7E-04		
				Antimony	1.5E+00	ug/L	2.4E-08	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.9E-07	mg/kg/day	6.0E-05	mg/kg/day	4.8E-03		
				Arsenic	1.8E+00	ug/L	2.9E-08	mg/kg/day	1.5E+00	(mg/kg/day) ⁻¹	4.4E-08	3.4E-07	mg/kg/day	3.0E-04	mg/kg/day	1.1E-03		
				Cadmium	7.1E-01	ug/L	1.2E-08	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.3E-07	mg/kg/day	2.5E-05	mg/kg/day	5.4E-03		
				Chromium ⁺³	7.1E+01	ug/L	1.2E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.4E-05	mg/kg/day	2.0E-02	mg/kg/day	6.9E-04		
				Chromium ⁺⁶	5.5E+00	ug/L	(a)	mg/kg/day	2.0E+01	(mg/kg/day) ⁻¹	9.6E-06	1.0E-06	mg/kg/day	7.5E-05	mg/kg/day	1.4E-02		
				Cobalt	6.4E+00	ug/L	1.0E-07	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.2E-06	mg/kg/day	3.0E-04	mg/kg/day	4.0E-03		
				Iron	5.0E+03	ug/L	8.2E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	9.5E-04	mg/kg/day	7.0E-01	mg/kg/day	1.4E-03		
				Manganese	1.3E+02	ug/L	2.1E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.5E-05	mg/kg/day	9.6E-04	mg/kg/day	2.6E-02		
				Mercury	1.5E-01	ug/L	2.4E-09	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.8E-08	mg/kg/day	1.6E-04	mg/kg/day	1.8E-04		
				Vanadium	1.8E+01	ug/L	2.9E-07	mg/kg/day	---	(mg/kg/day) ⁻¹	---	3.4E-06	mg/kg/day	5.0E-03	mg/kg/day	6.8E-04		
				Bis(2-Ethylhexyl) Phthalate	4.7E+00	ug/L	2.6E-05	mg/kg/day	1.4E-02	(mg/kg/day) ⁻¹	3.6E-07	3.0E-04	mg/kg/day	2.0E-02	mg/kg/day	1.5E-02		
				1,1,2-Trichloroethane	8.3E-01	ug/L	2.7E-07	mg/kg/day	5.7E-02	(mg/kg/day) ⁻¹	1.6E-08	3.2E-06	mg/kg/day	4.0E-03	mg/kg/day	8.0E-04		
				1,1-Dichloroethane	9.1E+01	ug/L	2.5E-05	mg/kg/day	5.7E-03	(mg/kg/day) ⁻¹	1.4E-07	2.9E-04	mg/kg/day	2.0E-01	mg/kg/day	1.5E-03		
				1,1-Dichloroethene	2.4E+01	ug/L	1.2E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.4E-04	mg/kg/day	5.0E-02	mg/kg/day	2.8E-03		
				1,2,4-Trichlorobenzene	1.1E+01	ug/L	5.1E-05	mg/kg/day	2.9E-02	(mg/kg/day) ⁻¹	1.5E-06	5.9E-04	mg/kg/day	1.0E-02	mg/kg/day	5.9E-02		
				1,2-Dichloroethane	1.1E+01	ug/L	2.0E-06	mg/kg/day	9.1E-02	(mg/kg/day) ⁻¹	1.8E-07	2.3E-05	mg/kg/day	2.0E-02	mg/kg/day	1.1E-03		
				1,2-Dichloropropane	9.7E-01	ug/L	3.5E-07	mg/kg/day	3.6E-02	(mg/kg/day) ⁻¹	1.2E-08	4.0E-06	mg/kg/day	9.0E-02	mg/kg/day	4.5E-05		
				1,4-Dioxane	2.0E+03	ug/L	2.5E-05	mg/kg/day	1.0E-01	(mg/kg/day) ⁻¹	2.5E-06	2.9E-04	mg/kg/day	3.0E-02	mg/kg/day	9.7E-03		
				Acetone	3.6E+02	ug/L	---	mg/kg/day	---	(mg/kg/day) ⁻¹	---	---	mg/kg/day	9.0E-01	mg/kg/day	---		
				Benzene	6.0E+01	ug/L	3.2E-05	mg/kg/day	5.5E-02	(mg/kg/day) ⁻¹	1.8E-06	3.8E-04	mg/kg/day	4.0E-03	mg/kg/day	9.4E-02		
				Bromodichloromethane	1.7E+00	ug/L	5.1E-07	mg/kg/day	6.2E-02	(mg/kg/day) ⁻¹	3.1E-08	5.9E-06	mg/kg/day	2.0E-02	mg/kg/day	3.0E-04		
				Chlorobenzene	2.3E+00	ug/L	3.0E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	3.5E-05	mg/kg/day	2.0E-02	mg/kg/day	1.7E-03		
				Chloroform	1.8E+01	ug/L	6.0E-06	mg/kg/day	3.1E-02	(mg/kg/day) ⁻¹	1.8E-07	7.0E-05	mg/kg/day	1.0E-02	mg/kg/day	7.0E-03		
				Cis-1,2-Dichloroethene	2.3E+02	ug/L	7.4E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	8.6E-04	mg/kg/day	2.0E-03	mg/kg/day	4.3E-01		
				Dibromochloromethane	6.8E-01	ug/L	---	mg/kg/day	1.4E-01	(mg/kg/day) ⁻¹	---	---	mg/kg/day	2.0E-02	mg/kg/day	---		
				Ethylbenzene	8.8E-01	ug/L	1.9E-06	mg/kg/day	1.1E-02	(mg/kg/day) ⁻¹	2.1E-08	2.2E-05	mg/kg/day	1.0E-01	mg/kg/day	2.2E-04		
				Methyl Cyclohexane	2.8E-01	ug/L	---	mg/kg/day	---	(mg/kg/day) ⁻¹	---	---	mg/kg/day	---	mg/kg/day	---		
				Methylene Chloride	4.9E-01	ug/L	6.5E-08	mg/kg/day	7.5E-03	(mg/kg/day) ⁻¹	4.9E-10	7.6E-07	mg/kg/day	6.0E-02	mg/kg/day	1.3E-05		
				Tetrachloroethene	2.2E+02	ug/L	4.5E-04	mg/kg/day	2.1E-03	(mg/kg/day) ⁻¹	9.5E-07	5.3E-03	mg/kg/day	6.0E-03	mg/kg/day	8.8E-01		
				Trichloroethene	7.4E+02	ug/L	(a)	mg/kg/day	4.6E-02	(mg/kg/day) ⁻¹	1.1E-04	5.3E-03	mg/kg/day	5.0E-04	mg/kg/day	1.1E+01		
				Vinyl Chloride	1.2E+01	ug/L	2.1E-06	mg/kg/day	7.2E-01	(mg/kg/day) ⁻¹	3.1E-06	2.5E-05	mg/kg/day	3.0E-03	mg/kg/day	8.3E-03		
Exp. Route Total											1.3E-04				1.2E+01			
Exposure Point Total											2.4E-03				1.3E+02			

TABLE 7.2 RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				Non-Cancer Hazard Calculations							
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD		Hazard Quotient		
							Value	Units	Value	Units		Value	Units	Value	Units			
Bedrock/Till Groundwater	Tap Water	Water Vapors	Inhalation	Bis(2-Ethylhexyl) Phthalate	1.7E-06	ug/m ³	5.9E-09	ug/m ³	2.4E-06	(ug/m ³) ⁻¹	1.4E-14	6.9E-08	ug/m ³	---	ug/m ³	---		
				1,1,2-Trichloroethane	2.2E-05	ug/m ³	7.6E-08	ug/m ³	---	(ug/m ³) ⁻¹	---	8.9E-07	ug/m ³	---	ug/m ³	---		
				1,1-Dichloroethane	2.8E-03	ug/m ³	9.7E-06	ug/m ³	1.6E-06	(ug/m ³) ⁻¹	1.6E-11	1.1E-04	ug/m ³	---	ug/m ³	---		
				1,1-Dichloroethene	7.8E-04	ug/m ³	2.7E-06	ug/m ³	---	(ug/m ³) ⁻¹	---	3.1E-05	ug/m ³	2.0E+02	ug/m ³	1.6E-07		
				1,2,4-Trichlorobenzene	2.8E-04	ug/m ³	9.6E-07	ug/m ³	---	(ug/m ³) ⁻¹	---	1.1E-05	ug/m ³	2.0E+00	ug/m ³	5.6E-06		
				1,2-Dichloroethane	3.5E-04	ug/m ³	1.2E-06	ug/m ³	2.6E-05	(ug/m ³) ⁻¹	3.2E-11	1.4E-05	ug/m ³	2.4E+03	ug/m ³	5.9E-09		
				1,2-Dichloropropane	2.8E-05	ug/m ³	9.6E-08	ug/m ³	1.0E-05	(ug/m ³) ⁻¹	9.6E-13	1.1E-06	ug/m ³	4.0E+00	ug/m ³	2.8E-07		
				1,4-Dioxane	1.0E-02	ug/m ³	3.5E-05	ug/m ³	7.7E-06	(ug/m ³) ⁻¹	2.7E-10	4.0E-04	ug/m ³	3.6E+03	ug/m ³	1.1E-07		
				Acetone	7.2E-03	ug/m ³	2.5E-05	ug/m ³	---	(ug/m ³) ⁻¹	---	2.9E-04	ug/m ³	3.1E+04	ug/m ³	9.3E-09		
				Benzene	1.8E-03	ug/m ³	6.1E-06	ug/m ³	7.8E-06	(ug/m ³) ⁻¹	4.8E-11	7.1E-05	ug/m ³	3.0E+01	ug/m ³	2.4E-06		
				Bromodichloromethane	5.4E-05	ug/m ³	1.9E-07	ug/m ³	3.7E-05	(ug/m ³) ⁻¹	6.9E-12	2.2E-06	ug/m ³	---	ug/m ³	---		
				Chlorobenzene	6.8E-05	ug/m ³	2.3E-07	ug/m ³	---	(ug/m ³) ⁻¹	---	2.7E-06	ug/m ³	5.0E+01	ug/m ³	5.4E-08		
				Chloroform	5.9E-04	ug/m ³	2.0E-06	ug/m ³	2.3E-05	(ug/m ³) ⁻¹	4.6E-11	2.4E-05	ug/m ³	9.8E+01	ug/m ³	2.4E-07		
				Cis-1,2-Dichloroethene	7.6E-03	ug/m ³	2.6E-05	ug/m ³	---	(ug/m ³) ⁻¹	---	3.1E-04	ug/m ³	---	ug/m ³	---		
				Dibromochloromethane	2.0E-05	ug/m ³	6.9E-08	ug/m ³	2.7E-05	(ug/m ³) ⁻¹	1.9E-12	8.1E-07	ug/m ³	---	ug/m ³	---		
				Ethylbenzene	2.4E-05	ug/m ³	8.1E-08	ug/m ³	2.5E-06	(ug/m ³) ⁻¹	2.0E-13	9.4E-07	ug/m ³	1.0E+03	ug/m ³	9.4E-10		
				Methyl Cyclohexane	---	ug/m ³	---	ug/m ³	---	(ug/m ³) ⁻¹	---	---	ug/m ³	---	ug/m ³	---		
				Methylene Chloride	1.7E-05	ug/m ³	5.9E-08	ug/m ³	4.7E-07	(ug/m ³) ⁻¹	2.8E-14	6.8E-07	ug/m ³	1.0E+03	ug/m ³	6.8E-10		
				Tetrachloroethene	6.3E-03	ug/m ³	2.1E-05	ug/m ³	2.6E-07	(ug/m ³) ⁻¹	5.6E-12	2.5E-04	ug/m ³	4.0E+01	ug/m ³	6.3E-06		
				Trichloroethene	2.2E-02	ug/m ³	(a)	ug/m ³	4.1E-06	(ug/m ³) ⁻¹	1.7E-09	8.8E-04	ug/m ³	2.0E+00	ug/m ³	4.4E-04		
				Vinyl Chloride	4.0E-04	ug/m ³	1.4E-06	ug/m ³	4.4E-06	(ug/m ³) ⁻¹	1.2E-11	1.6E-05	ug/m ³	1.0E+02	ug/m ³	1.6E-07		
Exp. Route Total											2.1E-09				4.6E-04			
Exposure Point Total											2.1E-09				4.6E-04			
Exposure Medium Total											2.4E-03				1.3E+02			
Medium and Receptor Total											2.4E-03				1.3E+02			

Shaded cells indicate that the calculation of cancer risks for these COPCs are adjusted by the equations in Table 7.2 RME MUT to account for a potential or known mutagenic mode of action.

(a) - Values for Intake/Exposure Concentration and Cancer Risk are based on mutagenic modes of actions as provided in Table 7.1 RME MUT

TABLE 7.2 RME MUT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS FOR MUTAGENIC COPCs
REASONABLE MAXIMUM EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Chemical of Potential Concern	Exposure Medium	Exposure Point	Exposure Route	Age Range	EPC	Units	Intake/ Exposure Concentration		CSF/Unit Risk		Cancer Risk Per Age Range	Total Cancer Risk
							Value	Units		Units		
Chromium* ⁶				0-2 Years	5.5	ug/L	1.0E-05	mg/kg/day	5.0E-01	(mg/kg/day) ⁻¹	5.0E-05	8.1E-05
				2-6 Years	5.5	ug/L	2.0E-05	mg/kg/day	5.0E-01	(mg/kg/day) ⁻¹		
Trichloroethene	Tap Water	Tap Water	Ingestion	0-2 Years	735	ug/L	1.3E-03	mg/kg/day	4.6E-02	(mg/kg/day) ⁻¹	6.2E-04	9.9E-04
				2-6 Years	735	ug/L	2.7E-03	mg/kg/day	4.6E-02	(mg/kg/day) ⁻¹		
Vinyl Chloride				0-6 Years	12	ug/L	6.3E-05	mg/kg/day	7.2E-01	(mg/kg/day) ⁻¹	9.1E-05	9.1E-05
Chromium* ⁶				0-2 Years	5.5	ug/L	3.0E-08	mg/kg/day	2.0E+01	(mg/kg/day) ⁻¹	6.0E-06	9.6E-06
				2-6 Years	5.5	ug/L	6.0E-08	mg/kg/day	2.0E+01	(mg/kg/day) ⁻¹		
Trichloroethene	Tap Water	Tap Water	Dermal	0-2 Years	735	ug/L	1.5E-04	mg/kg/day	4.6E-02	(mg/kg/day) ⁻¹	6.9E-05	1.1E-04
				2-6 Years	735	ug/L	3.0E-04	mg/kg/day	4.6E-02	(mg/kg/day) ⁻¹		
Vinyl Chloride				0-6 Years	12	ug/L	2.1E-06	mg/kg/day	7.2E-01	(mg/kg/day) ⁻¹	3.1E-06	3.1E-06
Trichloroethene	Tap Water	Water Vapors	Inhalation	0-2 Years	2.2E-02	ug/m ³	2.5E-05	ug/m ³	4.1E-06	(ug/m ³) ⁻¹	1.0E-09	1.7E-09
Vinyl Chloride				2-6 Years	2.2E-02	ug/m ³	5.0E-05	ug/m ³	4.1E-06	(ug/m ³) ⁻¹	6.2E-10	1.2E-11
				0-6 Years	4.0E-04	ug/m ³	1.4E-06	ug/m ³	4.4E-06	(ug/m ³) ⁻¹		1.2E-11

For vinyl chloride, the ADAF applied to the cancer risk is 2 as follows:

$$ELCR = (Intake or EC) \times (CSF or UF) \times 2$$

For chromium*⁶ and trichloroethene, the cancer risks are apportioned by age range and calculated as follows:

For Ingestion Intake:

$$\text{Intake} = \frac{EPC \times EF \times IR \times CF \times 2\text{ years}}{BW \times AT - C} \times 10 \times CSF$$

$$\text{Intake} = \frac{EPC \times EF \times IR \times CF \times 4\text{ years}}{BW \times AT - C} \times 3 \times CSF$$

For Dermal Intake:

$$\text{Intake} = \frac{DAeven \times EF \times EV \times SSA \times 2\text{ years}}{BW \times AT - C} \times 10 \times CSF$$

$$\text{Intake} = \frac{DAeven \times EF \times EV \times SSA \times 4\text{ years}}{BW \times AT - C} \times 3 \times CSF$$

For Inhalation Exposure Concentration:

$$EC = \frac{EPC \times EF \times ET \times 2\text{ years}}{AT - C} \times 10 \times UF$$

$$EC = \frac{EPC \times EF \times ET \times 4\text{ years}}{AT - C} \times 3 \times UF$$

TABLE 7.2 CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Bedrock/Till Groundwater	Tap Water	Tap Water	Ingestion	Aluminum	3.0E+03	ug/L	8.2E-03	mg/kg/day	---	(mg/kg/day) ⁻¹	---	9.5E-02	mg/kg/day	1.0E+00	mg/kg/day	9.5E-02
				Antimony	1.5E+00	ug/L	4.1E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	4.8E-05	mg/kg/day	4.0E-04	mg/kg/day	1.2E-01
				Arsenic	1.8E+00	ug/L	4.9E-06	mg/kg/day	1.5E+00	(mg/kg/day) ⁻¹	7.3E-06	5.7E-05	mg/kg/day	3.0E-04	mg/kg/day	1.9E-01
				Cadmium	7.1E-01	ug/L	1.9E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.3E-05	mg/kg/day	5.0E-04	mg/kg/day	4.5E-02
				Chromium ⁺³	7.1E+01	ug/L	2.0E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.3E-03	mg/kg/day	1.5E+00	mg/kg/day	1.5E-03
				Chromium ⁺⁶	5.5E+00	ug/L	(a)	mg/kg/day	5.0E-01	(mg/kg/day) ⁻¹	4.0E-05	1.8E-04	mg/kg/day	3.0E-03	mg/kg/day	5.9E-02
				Cobalt	6.4E+00	ug/L	1.7E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.0E-04	mg/kg/day	3.0E-04	mg/kg/day	6.8E-01
				Iron	5.0E+03	ug/L	1.4E-02	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.6E-01	mg/kg/day	7.0E-01	mg/kg/day	2.3E-01
				Manganese	1.3E+02	ug/L	3.5E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	4.1E-03	mg/kg/day	2.4E-02	mg/kg/day	1.7E-01
				Mercury	1.5E-01	ug/L	4.1E-07	mg/kg/day	---	(mg/kg/day) ⁻¹	---	4.8E-06	mg/kg/day	1.6E-04	mg/kg/day	3.0E-02
				Vanadium	1.8E+01	ug/L	4.9E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	5.7E-04	mg/kg/day	5.0E-03	mg/kg/day	1.1E-01
				Bis(2-Ethylhexyl) Phthalate	4.7E+00	ug/L	1.3E-05	mg/kg/day	1.4E-02	(mg/kg/day) ⁻¹	1.8E-07	1.5E-04	mg/kg/day	2.0E-02	mg/kg/day	7.5E-03
				1,1,2-Trichloroethane	8.3E-01	ug/L	2.3E-06	mg/kg/day	5.7E-02	(mg/kg/day) ⁻¹	1.3E-07	2.6E-05	mg/kg/day	--	mg/kg/day	--
				1,1-Dichloroethane	9.1E+01	ug/L	2.5E-04	mg/kg/day	5.7E-03	(mg/kg/day) ⁻¹	1.4E-06	2.9E-03	mg/kg/day	--	mg/kg/day	--
				1,1-Dichloroethene	2.4E+01	ug/L	6.7E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	7.8E-04	mg/kg/day	5.0E-02	mg/kg/day	1.6E-02
				1,2,4-Trichlorobenzene	1.1E+01	ug/L	3.0E-05	mg/kg/day	2.9E-02	(mg/kg/day) ⁻¹	8.7E-07	3.5E-04	mg/kg/day	1.0E-02	mg/kg/day	3.5E-02
				1,2-Dichloroethane	1.1E+01	ug/L	3.1E-05	mg/kg/day	9.1E-02	(mg/kg/day) ⁻¹	2.8E-06	3.6E-04	mg/kg/day	2.0E-02	mg/kg/day	1.8E-02
				1,2-Dichloropropane	9.7E-01	ug/L	2.7E-06	mg/kg/day	3.6E-02	(mg/kg/day) ⁻¹	9.6E-08	3.1E-05	mg/kg/day	9.0E-02	mg/kg/day	3.5E-04
				1,4-Dioxane	2.0E+03	ug/L	5.4E-03	mg/kg/day	1.0E-01	(mg/kg/day) ⁻¹	5.4E-04	6.3E-02	mg/kg/day	3.0E-02	mg/kg/day	2.1E+00
				Acetone	3.6E+02	ug/L	9.8E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.1E-02	mg/kg/day	9.0E-01	mg/kg/day	1.3E-02
				Benzene	6.0E+01	ug/L	1.6E-04	mg/kg/day	5.5E-02	(mg/kg/day) ⁻¹	9.0E-06	1.9E-03	mg/kg/day	4.0E-03	mg/kg/day	4.8E-01
				Bromodichlormethane	1.7E+00	ug/L	4.8E-06	mg/kg/day	6.2E-02	(mg/kg/day) ⁻¹	3.0E-07	5.6E-05	mg/kg/day	2.0E-02	mg/kg/day	2.8E-03
				Chlorobenzene	2.3E+00	ug/L	6.4E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	7.5E-05	mg/kg/day	2.0E-02	mg/kg/day	3.7E-03
				Chloroform	1.8E+01	ug/L	5.1E-05	mg/kg/day	3.1E-02	(mg/kg/day) ⁻¹	1.6E-06	5.9E-04	mg/kg/day	1.0E-02	mg/kg/day	5.9E-02
				Cis-1,2-Dichloroethene	2.3E+02	ug/L	6.4E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	7.5E-03	mg/kg/day	2.0E-03	mg/kg/day	3.8E+00
				Dibromochlormethane	6.8E-01	ug/L	1.9E-06	mg/kg/day	8.4E-02	(mg/kg/day) ⁻¹	1.6E-07	2.2E-05	mg/kg/day	2.0E-02	mg/kg/day	1.1E-03
				Ethylbenzene	8.8E-01	ug/L	2.4E-06	mg/kg/day	1.1E-02	(mg/kg/day) ⁻¹	2.6E-08	2.8E-05	mg/kg/day	1.0E-01	mg/kg/day	2.8E-04
				Methyl Cyclohexane	2.8E-01	ug/L	7.8E-07	mg/kg/day	---	(mg/kg/day) ⁻¹	---	9.0E-06	mg/kg/day	--	mg/kg/day	--
				Methylene Chloride	4.9E-01	ug/L	1.3E-06	mg/kg/day	7.5E-03	(mg/kg/day) ⁻¹	1.0E-08	1.0E-05	mg/kg/day	6.0E-02	mg/kg/day	2.6E-04
				Tetrachloroethene	2.2E+02	ug/L	5.9E-04	mg/kg/day	2.1E-03	(mg/kg/day) ⁻¹	1.2E-06	6.9E-03	mg/kg/day	6.0E-03	mg/kg/day	1.1E+00
				Trichloroethene	7.4E+02	ug/L	(a)	mg/kg/day	4.6E-02	(mg/kg/day) ⁻¹	4.9E-04	2.3E-02	mg/kg/day	5.0E-04	mg/kg/day	4.7E+01
				Vinyl Chloride	1.2E+01	ug/L	3.2E-05	mg/kg/day	7.2E-01	(mg/kg/day) ⁻¹	4.6E-05	3.7E-04	mg/kg/day	3.0E-03	mg/kg/day	1.2E-01
Exp. Route Total												1.1E-03			5.6E+01	

TABLE 7.2 CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations						Non-Cancer Hazard Calculations						
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD		Hazard Quotient			
							Value	Units	Value	Units		Value	Units	Value	Units				
Bedrock/Till Groundwater	Tap Water	Tap Water	Dermal	Aluminum	3.0E+03	ug/L	1.5E-05	mg/kg/day	---	(mg/kg/day) ¹	---	1.8E-04	mg/kg/day	1.0E+00	mg/kg/day	1.8E-04			
				Antimony	1.5E+00	ug/L	7.6E-09	mg/kg/day	---	(mg/kg/day) ¹	---	8.9E-08	mg/kg/day	6.0E-05	mg/kg/day	1.5E-03			
				Arsenic	1.8E+00	ug/L	9.0E-09	mg/kg/day	1.5E+00	(mg/kg/day) ¹	1.4E-08	1.1E-07	mg/kg/day	3.0E-04	mg/kg/day	3.5E-04			
				Cadmium	7.1E-01	ug/L	3.6E-09	mg/kg/day	---	(mg/kg/day) ¹	---	4.2E-08	mg/kg/day	2.5E-05	mg/kg/day	1.7E-03			
				Chromium ⁺³	7.1E+01	ug/L	3.6E-07	mg/kg/day	---	(mg/kg/day) ¹	---	4.2E-06	mg/kg/day	2.0E-02	mg/kg/day	2.2E-04			
				Chromium ⁺⁶	5.5E+00	ug/L	(a)	mg/kg/day	2.0E+01	(mg/kg/day) ¹	3.0E-06	3.3E-07	mg/kg/day	7.5E-05	mg/kg/day	4.4E-03			
				Cobalt	6.4E+00	ug/L	3.2E-08	mg/kg/day	---	(mg/kg/day) ¹	---	3.8E-07	mg/kg/day	3.0E-04	mg/kg/day	1.3E-03			
				Iron	5.0E+03	ug/L	2.5E-05	mg/kg/day	---	(mg/kg/day) ¹	---	3.0E-04	mg/kg/day	7.0E-01	mg/kg/day	4.2E-04			
				Manganese	1.3E+02	ug/L	6.6E-07	mg/kg/day	---	(mg/kg/day) ¹	---	7.6E-06	mg/kg/day	9.6E-04	mg/kg/day	8.0E-03			
				Mercury	1.5E-01	ug/L	7.6E-10	mg/kg/day	---	(mg/kg/day) ¹	---	8.9E-09	mg/kg/day	1.6E-04	mg/kg/day	5.5E-05			
				Vanadium	1.8E+01	ug/L	9.1E-08	mg/kg/day	---	(mg/kg/day) ¹	---	1.1E-06	mg/kg/day	5.0E-03	mg/kg/day	2.1E-04			
				Bis(2-Ethylhexyl) Phthalate	4.7E+00	ug/L	1.4E-05	mg/kg/day	1.4E-02	(mg/kg/day) ¹	2.0E-07	1.7E-04	mg/kg/day	2.0E-02	mg/kg/day	8.4E-03			
				1,1,2-Trichloroethane	8.3E-01	ug/L	1.5E-07	mg/kg/day	5.7E-02	(mg/kg/day) ¹	8.7E-09	1.8E-06	mg/kg/day	4.0E-03	mg/kg/day	4.5E-04			
				1,1-Dichloroethane	9.1E+01	ug/L	1.4E-05	mg/kg/day	5.7E-03	(mg/kg/day) ¹	8.0E-08	1.6E-04	mg/kg/day	2.0E-01	mg/kg/day	8.2E-04			
				1,1-Dichloroethene	2.4E+01	ug/L	6.6E-06	mg/kg/day	---	(mg/kg/day) ¹	---	7.7E-05	mg/kg/day	5.0E-02	mg/kg/day	1.5E-03			
				1,2,4-Trichlorobenzene	1.1E+01	ug/L	2.8E-05	mg/kg/day	2.9E-02	(mg/kg/day) ¹	8.2E-07	3.3E-04	mg/kg/day	1.0E-02	mg/kg/day	3.3E-02			
				1,2-Dichloroethane	1.1E+01	ug/L	1.1E-06	mg/kg/day	9.1E-02	(mg/kg/day) ¹	9.9E-08	1.3E-05	mg/kg/day	2.0E-02	mg/kg/day	6.4E-04			
				1,2-Dichloropropane	9.7E-01	ug/L	1.9E-07	mg/kg/day	3.6E-02	(mg/kg/day) ¹	6.9E-09	2.2E-06	mg/kg/day	9.0E-02	mg/kg/day	2.5E-05			
				1,4-Dioxane	2.0E+03	ug/L	1.4E-05	mg/kg/day	1.0E-01	(mg/kg/day) ¹	1.4E-06	1.6E-04	mg/kg/day	3.0E-02	mg/kg/day	5.4E-03			
				Acetone	3.6E+02	ug/L	---	mg/kg/day	---	(mg/kg/day) ¹	---	---	mg/kg/day	9.0E-01	mg/kg/day	---			
				Benzene	6.0E+01	ug/L	1.8E-05	mg/kg/day	5.5E-02	(mg/kg/day) ¹	9.9E-07	2.1E-04	mg/kg/day	4.0E-03	mg/kg/day	5.2E-02			
				Bromodichloromethane	1.7E+00	ug/L	2.8E-07	mg/kg/day	6.2E-02	(mg/kg/day) ¹	1.8E-08	3.3E-06	mg/kg/day	2.0E-02	mg/kg/day	1.6E-04			
				Chlorobenzene	2.3E+00	ug/L	1.7E-06	mg/kg/day	---	(mg/kg/day) ¹	---	1.9E-05	mg/kg/day	2.0E-02	mg/kg/day	9.7E-04			
				Chloroform	1.8E+01	ug/L	3.3E-06	mg/kg/day	3.1E-02	(mg/kg/day) ¹	1.0E-07	3.9E-05	mg/kg/day	1.0E-02	mg/kg/day	3.9E-03			
				Cis-1,2-Dichloroethene	2.3E+02	ug/L	4.1E-05	mg/kg/day	---	(mg/kg/day) ¹	---	4.8E-04	mg/kg/day	2.0E-03	mg/kg/day	2.4E-01			
				Dibromochloromethane	6.8E-01	ug/L	---	mg/kg/day	1.4E-01	(mg/kg/day) ¹	---	---	mg/kg/day	2.0E-02	mg/kg/day	---			
				Ethylbenzene	8.8E-01	ug/L	1.0E-06	mg/kg/day	1.1E-02	(mg/kg/day) ¹	1.1E-08	1.2E-05	mg/kg/day	1.0E-01	mg/kg/day	1.2E-04			
				Methyl Cyclohexane	2.8E-01	ug/L	---	mg/kg/day	---	(mg/kg/day) ¹	---	---	mg/kg/day	---	mg/kg/day	---			
				Methylene Chloride	4.9E-01	ug/L	3.6E-08	mg/kg/day	7.5E-03	(mg/kg/day) ¹	2.7E-10	4.3E-07	mg/kg/day	6.0E-02	mg/kg/day	7.1E-06			
				Tetrachloroethene	2.2E+02	ug/L	2.5E-04	mg/kg/day	2.1E-03	(mg/kg/day) ¹	5.3E-07	3.0E-03	mg/kg/day	6.0E-03	mg/kg/day	4.9E-01			
				Trichloroethene	7.4E+02	ug/L	(a)	mg/kg/day	4.6E-02	(mg/kg/day) ¹	6.2E-05	2.9E-03	mg/kg/day	5.0E-04	mg/kg/day	5.9E-03			
				Vinyl Chloride	1.2E+01	ug/L	1.2E-06	mg/kg/day	7.2E-01	(mg/kg/day) ¹	1.7E-06	1.4E-05	mg/kg/day	3.0E-03	mg/kg/day	4.6E-03			
Exp. Route Total											7.1E-05					6.7E+00			
Exposure Point Total											1.2E-03					6.3E+01			

TABLE 7.2 CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Bedrock/Till Groundwater	Tap Water	Water Vapors	Inhalation	Bis(2-Ethylhexyl) Phthalate	1.6E-07	ug/m ³	1.8E-10	ug/m ³	2.4E-06	(ug/m ³) ⁻¹	4.3E-16	2.1E-09	ug/m ³	---	ug/m ³	---
				1,1,2-Trichloroethane	2.1E-06	ug/m ³	2.3E-09	ug/m ³	---	(ug/m ³) ⁻¹	---	2.7E-08	ug/m ³	---	ug/m ³	---
				1,1-Dichloroethane	2.6E-04	ug/m ³	3.0E-07	ug/m ³	1.6E-06	(ug/m ³) ⁻¹	4.7E-13	3.5E-06	ug/m ³	---	ug/m ³	---
				1,1-Dichloroethene	7.2E-05	ug/m ³	8.2E-08	ug/m ³	---	(ug/m ³) ⁻¹	---	9.5E-07	ug/m ³	2.0E+02	ug/m ³	4.8E-09
				1,2,4-Trichlorobenzene	2.6E-05	ug/m ³	2.9E-08	ug/m ³	---	(ug/m ³) ⁻¹	---	3.4E-07	ug/m ³	2.0E+00	ug/m ³	1.7E-07
				1,2-Dichloroethane	3.3E-05	ug/m ³	3.7E-08	ug/m ³	2.6E-05	(ug/m ³) ⁻¹	9.6E-13	4.3E-07	ug/m ³	2.4E+03	ug/m ³	1.8E-10
				1,2-Dichloropropane	2.6E-06	ug/m ³	2.9E-09	ug/m ³	1.0E-05	(ug/m ³) ⁻¹	2.9E-14	3.4E-08	ug/m ³	4.0E+00	ug/m ³	8.6E-09
				1,4-Dioxane	9.3E-04	ug/m ³	1.1E-06	ug/m ³	7.7E-06	(ug/m ³) ⁻¹	8.1E-12	1.2E-05	ug/m ³	3.6E+03	ug/m ³	3.4E-09
				Acetone	6.7E-04	ug/m ³	7.5E-07	ug/m ³	---	(ug/m ³) ⁻¹	---	8.8E-06	ug/m ³	3.1E+04	ug/m ³	2.8E-10
				Benzene	1.7E-04	ug/m ³	1.9E-07	ug/m ³	7.8E-06	(ug/m ³) ⁻¹	1.5E-12	2.2E-06	ug/m ³	3.0E+01	ug/m ³	7.3E-08
				Bromodichlormethane	5.0E-06	ug/m ³	5.7E-09	ug/m ³	3.7E-05	(ug/m ³) ⁻¹	2.1E-13	6.6E-08	ug/m ³	---	ug/m ³	---
				Chlorobenzene	6.2E-06	ug/m ³	7.1E-09	ug/m ³	---	(ug/m ³) ⁻¹	---	8.2E-08	ug/m ³	5.0E+01	ug/m ³	1.6E-09
				Chloroform	5.5E-05	ug/m ³	6.2E-08	ug/m ³	2.3E-05	(ug/m ³) ⁻¹	1.4E-12	7.2E-07	ug/m ³	9.8E+01	ug/m ³	7.3E-09
				Cis-1,2-Dichloroethene	7.1E-04	ug/m ³	8.0E-07	ug/m ³	---	(ug/m ³) ⁻¹	---	9.3E-06	ug/m ³	---	ug/m ³	---
				Dibromochloromethane	1.9E-06	ug/m ³	2.1E-09	ug/m ³	2.7E-05	(ug/m ³) ⁻¹	5.7E-14	2.5E-08	ug/m ³	---	ug/m ³	---
				Ethylbenzene	2.2E-06	ug/m ³	2.5E-09	ug/m ³	2.5E-06	(ug/m ³) ⁻¹	6.2E-15	2.9E-08	ug/m ³	1.0E+03	ug/m ³	2.9E-11
				Methyl Cyclohexane	---	ug/m ³	---	ug/m ³	---	(ug/m ³) ⁻¹	---	---	ug/m ³	---	ug/m ³	---
				Methylene Chloride	1.6E-06	ug/m ³	1.8E-09	ug/m ³	4.7E-07	(ug/m ³) ⁻¹	8.4E-16	2.1E-08	ug/m ³	1.0E+03	ug/m ³	2.1E-11
				Tetrachloroethene	5.8E-04	ug/m ³	6.5E-07	ug/m ³	2.6E-07	(ug/m ³) ⁻¹	1.7E-13	7.6E-06	ug/m ³	4.0E+01	ug/m ³	1.9E-07
				Trichloroethene	2.0E-03	ug/m ³	(a)	ug/m ³	4.1E-06	(ug/m ³) ⁻¹	5.1E-11	2.7E-05	ug/m ³	2.0E+00	ug/m ³	1.3E-05
				Vinyl Chloride	3.7E-05	ug/m ³	4.2E-08	ug/m ³	4.4E-06	(ug/m ³) ⁻¹	3.7E-13	4.9E-07	ug/m ³	1.0E+02	ug/m ³	4.9E-09
				Exp. Route Total					6.4E-11							1.4E-05
				Exposure Point Total					6.4E-11							1.4E-05
				Exposure Medium Total					1.2E-03							6.3E+01
Medium and Receptor Total					1.2E-03											6.3E+01

Shaded cells indicate that the calculation of cancer risks for these COPCs are adjusted by the equations in Table 7.2 CT MUT to account for a potential or known mutagenic mode of action.

(a) - Values for Intake/Exposure Concentration and Cancer Risk are based on mutagenic modes of actions as provided in Table 7.1 CT MUT

TABLE 7.2 CT MUT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS FOR MUTAGENIC COPCs
CENTRAL TENDENCY EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Chemical of Potential Concern	Exposure Medium	Exposure Point	Exposure Route	Age Range	EPC	Units	Intake/ Exposure Concentration		CSF/Unit Risk		Cancer Risk Per Age Range	Total Cancer Risk
							Value	Units	Value	Units		
Chromium* ⁶	Tap Water	Tap Water	Ingestion	0-2 Years	5.5	ug/L	5.0E-06	mg/kg/day	5.0E-01	(mg/kg/day) ⁻¹	2.5E-05	4.0E-05
				2-6 Years	5.5	ug/L	1.0E-05	mg/kg/day	5.0E-01	(mg/kg/day) ⁻¹	1.5E-05	
				0-2 Years	735	ug/L	6.7E-04	mg/kg/day	4.6E-02	(mg/kg/day) ⁻¹	3.1E-04	
Trichloroethene	Tap Water	Tap Water	Ingestion	2-6 Years	735	ug/L	1.3E-03	mg/kg/day	4.6E-02	(mg/kg/day) ⁻¹	1.9E-04	4.9E-04
				0-6 Years	12	ug/L	3.2E-05	mg/kg/day	7.2E-01	(mg/kg/day) ⁻¹	4.6E-05	
				0-2 Years	5.5	ug/L	9.3E-09	mg/kg/day	2.0E+01	(mg/kg/day) ⁻¹	1.9E-06	
Vinyl Chloride	Tap Water	Tap Water	Dermal	2-6 Years	5.5	ug/L	1.9E-08	mg/kg/day	2.0E+01	(mg/kg/day) ⁻¹	1.1E-06	3.0E-06
				0-2 Years	735	ug/L	8.4E-05	mg/kg/day	4.6E-02	(mg/kg/day) ⁻¹	3.9E-05	
				2-6 Years	735	ug/L	1.7E-04	mg/kg/day	4.6E-02	(mg/kg/day) ⁻¹	2.3E-05	
Trichloroethene	Tap Water	Water Vapors	Inhalation	0-6 Years	12	ug/L	1.2E-06	mg/kg/day	7.2E-01	(mg/kg/day) ⁻¹	1.7E-06	1.7E-06
				0-2 Years	2.0E-03	ug/m ³	7.7E-07	ug/m ³	4.1E-06	(ug/m ³) ⁻¹	3.2E-11	
				2-6 Years	2.0E-03	ug/m ³	1.5E-06	ug/m ³	4.1E-06	(ug/m ³) ⁻¹	1.9E-11	
Vinyl Chloride	Tap Water	Water Vapors	Inhalation	0-6 Years	3.7E-05	ug/m ³	4.2E-08	ug/m ³	4.4E-06	(ug/m ³) ⁻¹	3.7E-13	5.1E-11

For vinyl chloride, the ADAF applied to the cancer risk is 2 as follows:

$$ELCR = (Intake or EC) \times (CSF or UF) \times 2$$

For chromium*⁶ and trichloroethene, the cancer risks are apportioned by age range and calculated as follows:

For Ingestion Intake:

0-2 Years

$$Intake = \frac{EPC \times EF \times IR \times CF \times 2 \text{ years}}{BW \times AT - C} \times 10 \times CSF$$

2-6 Years

$$Intake = \frac{EPC \times EF \times IR \times CF \times 4 \text{ years}}{BW \times AT - C} \times 3 \times CSF$$

For Dermal Intake:

0-2 Years

$$Intake = \frac{DAevent \times EF \times EV \times SSA \times 2 \text{ years}}{BW \times AT - C} \times 10 \times CSF$$

2-6 Years

$$Intake = \frac{DAevent \times EF \times EV \times SSA \times 4 \text{ years}}{BW \times AT - C} \times 3 \times CSF$$

For Inhalation Exposure Concentration:

0-2 Years

$$EC = \frac{EPC \times EF \times ET \times 2 \text{ years}}{AT - C} \times 10 \times UF$$

2-6 Years

$$EC = \frac{EPC \times EF \times ET \times 4 \text{ years}}{AT - C} \times 3 \times UF$$

TABLE 7.3 RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Industrial/Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Bedrock/Till Groundwater	Tap Water	Tap Water	Ingestion	Aluminum	3.0E+03	ug/L	1.0E-02	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.9E-02	mg/kg/day	1.0E+00	mg/kg/day	2.9E-02
				Antimony	1.5E+00	ug/L	5.2E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.5E-05	mg/kg/day	4.0E-04	mg/kg/day	3.7E-02
				Arsenic	1.8E+00	ug/L	6.2E-06	mg/kg/day	1.5E+00	(mg/kg/day) ⁻¹	9.4E-06	1.7E-05	mg/kg/day	3.0E-04	mg/kg/day	5.8E-02
				Cadmium	7.1E-01	ug/L	2.5E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	6.9E-06	mg/kg/day	5.0E-04	mg/kg/day	1.4E-02
				Chromium ⁺³	7.1E+01	ug/L	2.5E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	7.0E-04	mg/kg/day	1.5E+00	mg/kg/day	4.6E-04
				Chromium ⁺⁶	5.5E+00	ug/L	1.9E-05	mg/kg/day	5.0E-01	(mg/kg/day) ⁻¹	9.7E-06	5.4E-05	mg/kg/day	3.0E-03	mg/kg/day	1.8E-02
				Cobalt	6.4E+00	ug/L	2.2E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	6.2E-05	mg/kg/day	3.0E-04	mg/kg/day	2.1E-01
				Iron	5.0E+03	ug/L	1.8E-02	mg/kg/day	---	(mg/kg/day) ⁻¹	---	4.9E-02	mg/kg/day	7.0E-01	mg/kg/day	7.0E-02
				Manganese	1.3E+02	ug/L	4.5E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.3E-03	mg/kg/day	2.4E-02	mg/kg/day	5.3E-02
				Mercury	1.5E-01	ug/L	5.2E-07	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.5E-06	mg/kg/day	1.6E-04	mg/kg/day	9.2E-03
				Vanadium	1.8E+01	ug/L	6.3E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.8E-04	mg/kg/day	5.0E-03	mg/kg/day	3.5E-02
				Bis(2-Ethylhexyl) Phthalate	4.7E+00	ug/L	1.6E-05	mg/kg/day	1.4E-02	(mg/kg/day) ⁻¹	2.3E-07	4.6E-05	mg/kg/day	2.0E-02	mg/kg/day	2.3E-03
				1,1,2-Trichloroethane	8.3E-01	ug/L	2.9E-06	mg/kg/day	5.7E-02	(mg/kg/day) ⁻¹	1.6E-07	8.1E-06	mg/kg/day	---	mg/kg/day	---
				1,1-Dichloroethane	9.1E+01	ug/L	3.2E-04	mg/kg/day	5.7E-03	(mg/kg/day) ⁻¹	1.8E-06	8.9E-04	mg/kg/day	---	mg/kg/day	---
				1,1-Dichloroethene	2.4E+01	ug/L	8.5E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.4E-04	mg/kg/day	5.0E-02	mg/kg/day	4.8E-03
				1,2,4-Trichlorobenzene	1.1E+01	ug/L	3.8E-05	mg/kg/day	2.9E-02	(mg/kg/day) ⁻¹	1.1E-06	1.1E-04	mg/kg/day	1.0E-02	mg/kg/day	1.1E-02
				1,2-Dichloroethane	1.1E+01	ug/L	3.9E-05	mg/kg/day	9.1E-02	(mg/kg/day) ⁻¹	3.6E-06	1.1E-04	mg/kg/day	2.0E-02	mg/kg/day	5.5E-03
				1,2-Dichloropropane	9.7E-01	ug/L	3.4E-06	mg/kg/day	3.6E-02	(mg/kg/day) ⁻¹	1.2E-07	9.5E-06	mg/kg/day	9.0E-02	mg/kg/day	1.1E-04
				1,4-Dioxane	2.0E+03	ug/L	6.8E-03	mg/kg/day	1.0E-01	(mg/kg/day) ⁻¹	6.8E-04	1.9E-02	mg/kg/day	3.0E-02	mg/kg/day	6.4E-01
				Acetone	3.6E+02	ug/L	1.3E-03	mg/kg/day	---	(mg/kg/day) ⁻¹	---	3.5E-03	mg/kg/day	9.0E-01	mg/kg/day	3.9E-03
				Benzene	6.0E+01	ug/L	2.1E-04	mg/kg/day	5.5E-02	(mg/kg/day) ⁻¹	1.1E-05	5.8E-04	mg/kg/day	4.0E-03	mg/kg/day	1.5E-01
				Bromodichlormethane	1.7E+00	ug/L	6.1E-06	mg/kg/day	6.2E-02	(mg/kg/day) ⁻¹	3.8E-07	1.7E-05	mg/kg/day	2.0E-02	mg/kg/day	8.6E-04
				Chlorobenzene	2.3E+00	ug/L	8.2E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.3E-05	mg/kg/day	2.0E-02	mg/kg/day	1.1E-03
				Chloroform	1.8E+01	ug/L	6.5E-05	mg/kg/day	3.1E-02	(mg/kg/day) ⁻¹	2.0E-06	1.8E-04	mg/kg/day	1.0E-02	mg/kg/day	1.8E-02
				Cis-1,2-Dichloroethene	2.3E+02	ug/L	8.2E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.3E-03	mg/kg/day	2.0E-03	mg/kg/day	1.1E+00
				Dibromochlormethane	6.8E-01	ug/L	2.4E-06	mg/kg/day	8.4E-02	(mg/kg/day) ⁻¹	2.0E-07	6.6E-06	mg/kg/day	2.0E-02	mg/kg/day	3.3E-04
				Ethylbenzene	8.8E-01	ug/L	3.1E-06	mg/kg/day	1.1E-02	(mg/kg/day) ⁻¹	3.4E-08	8.6E-06	mg/kg/day	1.0E-01	mg/kg/day	8.6E-05
				Methyl Cyclohexane	2.8E-01	ug/L	9.9E-07	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.8E-06	mg/kg/day	---	mg/kg/day	---
				Methylene Chloride	4.9E-01	ug/L	1.7E-06	mg/kg/day	7.5E-03	(mg/kg/day) ⁻¹	1.3E-08	4.8E-06	mg/kg/day	6.0E-02	mg/kg/day	8.0E-05
				Tetrachloroethene	2.2E+02	ug/L	7.5E-04	mg/kg/day	2.1E-03	(mg/kg/day) ⁻¹	1.6E-06	2.1E-03	mg/kg/day	6.0E-03	mg/kg/day	3.5E-01
				Trichloroethene	7.4E+02	ug/L	2.6E-03	mg/kg/day	4.6E-02	(mg/kg/day) ⁻¹	1.2E-04	7.2E-03	mg/kg/day	5.0E-04	mg/kg/day	1.4E+01
				Vinyl Chloride	1.2E+01	ug/L	4.0E-05	mg/kg/day	7.2E-01	(mg/kg/day) ⁻¹	2.9E-05	1.1E-04	mg/kg/day	3.0E-03	mg/kg/day	3.8E-02
Exp. Route Total										8.7E-04					1.7E+01	

TABLE 7.3 RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Industrial/Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations						Non-Cancer Hazard Calculations						
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD		Hazard Quotient			
							Value	Units	Value	Units		Value	Units	Value	Units				
Bedrock/Till Groundwater	Tap Water	Tap Water	Dermal	Aluminum	3.0E+03	ug/L	1.5E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	4.1E-05	mg/kg/day	1.0E+00	mg/kg/day	4.1E-05			
				Antimony	1.5E+00	ug/L	7.4E-09	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.1E-08	mg/kg/day	6.0E-05	mg/kg/day	3.5E-04			
				Arsenic	1.8E+00	ug/L	8.8E-09	mg/kg/day	1.5E+00	(mg/kg/day) ⁻¹	1.3E-08	2.5E-08	mg/kg/day	3.0E-04	mg/kg/day	8.2E-05			
				Cadmium	7.1E-01	ug/L	3.5E-09	mg/kg/day	---	(mg/kg/day) ⁻¹	---	9.8E-09	mg/kg/day	2.5E-05	mg/kg/day	3.9E-04			
				Chromium ⁺³	7.1E+01	ug/L	3.5E-07	mg/kg/day	---	(mg/kg/day) ⁻¹	---	9.9E-07	mg/kg/day	2.0E-02	mg/kg/day	5.1E-05			
				Chromium ⁺⁶	5.5E+00	ug/L	2.7E-08	mg/kg/day	2.0E+01	(mg/kg/day) ⁻¹	5.5E-07	7.7E-08	mg/kg/day	7.5E-05	mg/kg/day	1.0E-03			
				Cobalt	6.4E+00	ug/L	3.1E-08	mg/kg/day	---	(mg/kg/day) ⁻¹	---	8.8E-08	mg/kg/day	3.0E-04	mg/kg/day	2.9E-04			
				Iron	5.0E+03	ug/L	2.5E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	7.0E-05	mg/kg/day	7.0E-01	mg/kg/day	9.9E-05			
				Manganese	1.3E+02	ug/L	6.4E-07	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.8E-06	mg/kg/day	9.6E-04	mg/kg/day	1.9E-03			
				Mercury	1.5E-01	ug/L	7.4E-10	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.1E-09	mg/kg/day	1.6E-04	mg/kg/day	1.3E-05			
				Vanadium	1.8E+01	ug/L	8.9E-08	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.5E-07	mg/kg/day	5.0E-03	mg/kg/day	5.0E-05			
				Bis(2-Ethylhexyl) Phthalate	4.7E+00	ug/L	7.4E-06	mg/kg/day	1.4E-02	(mg/kg/day) ⁻¹	1.0E-07	2.1E-05	mg/kg/day	2.0E-02	mg/kg/day	1.0E-03			
				1,1,2-Trichloroethane	8.3E-01	ug/L	7.9E-08	mg/kg/day	5.7E-02	(mg/kg/day) ⁻¹	4.5E-09	2.2E-07	mg/kg/day	4.0E-03	mg/kg/day	5.5E-05			
				1,1-Dichloroethane	9.1E+01	ug/L	7.2E-06	mg/kg/day	5.7E-03	(mg/kg/day) ⁻¹	4.1E-08	2.0E-05	mg/kg/day	2.0E-01	mg/kg/day	1.0E-04			
				1,1-Dichloroethene	2.4E+01	ug/L	3.4E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	9.6E-06	mg/kg/day	5.0E-02	mg/kg/day	1.9E-04			
				1,2,4-Trichlorobenzene	1.1E+01	ug/L	1.5E-05	mg/kg/day	2.9E-02	(mg/kg/day) ⁻¹	4.3E-07	4.1E-05	mg/kg/day	1.0E-02	mg/kg/day	4.1E-03			
				1,2-Dichloroethane	1.1E+01	ug/L	5.6E-07	mg/kg/day	9.1E-02	(mg/kg/day) ⁻¹	5.1E-08	1.5E-06	mg/kg/day	2.0E-02	mg/kg/day	7.9E-05			
				1,2-Dichloropropane	9.7E-01	ug/L	1.0E-07	mg/kg/day	3.6E-02	(mg/kg/day) ⁻¹	3.6E-09	2.8E-07	mg/kg/day	9.0E-02	mg/kg/day	3.1E-06			
				1,4-Dioxane	2.0E+03	ug/L	7.2E-06	mg/kg/day	1.0E-01	(mg/kg/day) ⁻¹	7.2E-07	2.0E-05	mg/kg/day	3.0E-02	mg/kg/day	6.7E-04			
				Acetone	3.6E+02	ug/L	---	mg/kg/day	---	(mg/kg/day) ⁻¹	---	---	mg/kg/day	9.0E-01	mg/kg/day	---			
				Benzene	6.0E+01	ug/L	9.3E-06	mg/kg/day	5.5E-02	(mg/kg/day) ⁻¹	5.1E-07	2.6E-05	mg/kg/day	4.0E-03	mg/kg/day	6.5E-03			
				Bromodichloromethane	1.7E+00	ug/L	1.5E-07	mg/kg/day	6.2E-02	(mg/kg/day) ⁻¹	9.0E-09	4.1E-07	mg/kg/day	2.0E-02	mg/kg/day	2.0E-05			
				Chlorobenzene	2.3E+00	ug/L	8.6E-07	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.4E-06	mg/kg/day	2.0E-02	mg/kg/day	1.2E-04			
				Chloroform	1.8E+01	ug/L	1.7E-06	mg/kg/day	3.1E-02	(mg/kg/day) ⁻¹	5.3E-08	4.8E-06	mg/kg/day	1.0E-02	mg/kg/day	4.8E-04			
				Cis-1,2-Dichloroethene	2.3E+02	ug/L	2.1E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	6.0E-05	mg/kg/day	2.0E-03	mg/kg/day	3.0E-02			
				Dibromochloromethane	6.8E-01	ug/L	---	mg/kg/day	1.4E-01	(mg/kg/day) ⁻¹	---	---	mg/kg/day	2.0E-02	mg/kg/day	---			
				Ethylbenzene	8.8E-01	ug/L	5.4E-07	mg/kg/day	1.1E-02	(mg/kg/day) ⁻¹	5.9E-09	1.5E-06	mg/kg/day	1.0E-01	mg/kg/day	1.5E-05			
				Methyl Cyclohexane	2.8E-01	ug/L	---	mg/kg/day	---	(mg/kg/day) ⁻¹	---	---	mg/kg/day	--	mg/kg/day	---			
				Methylene Chloride	4.9E-01	ug/L	1.9E-08	mg/kg/day	7.5E-03	(mg/kg/day) ⁻¹	1.4E-10	5.3E-08	mg/kg/day	6.0E-02	mg/kg/day	8.8E-07			
				Tetrachloroethene	2.2E+02	ug/L	1.3E-04	mg/kg/day	2.1E-03	(mg/kg/day) ⁻¹	2.8E-07	3.7E-04	mg/kg/day	6.0E-03	mg/kg/day	6.1E-02			
				Trichloroethene	7.4E+02	ug/L	1.3E-04	mg/kg/day	4.6E-02	(mg/kg/day) ⁻¹	6.0E-06	3.6E-04	mg/kg/day	5.0E-04	mg/kg/day	7.3E-01			
				Vinyl Chloride	1.2E+01	ug/L	6.1E-07	mg/kg/day	7.2E-01	(mg/kg/day) ⁻¹	4.4E-07	1.7E-06	mg/kg/day	3.0E-03	mg/kg/day	5.7E-04			
Exp. Route Total											9.2E-06					8.5E-01			
Exposure Point Total											8.8E-04					1.8E+01			
Exposure Medium Total											8.8E-04					1.8E+01			
Medium and Receptor Total											8.8E-04					1.8E+01			

TABLE 7.3 CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Industrial/Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Bedrock/Till Groundwater	Tap Water	Tap Water	Ingestion	Aluminum	3.0E+03	ug/L	1.5E-03	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.5E-02	mg/kg/day	1.0E+00	mg/kg/day	1.5E-02
				Antimony	1.5E+00	ug/L	7.6E-07	mg/kg/day	---	(mg/kg/day) ⁻¹	---	7.3E-06	mg/kg/day	4.0E-04	mg/kg/day	1.8E-02
				Arsenic	1.8E+00	ug/L	9.0E-07	mg/kg/day	1.5E+00	(mg/kg/day) ⁻¹	1.3E-06	8.7E-06	mg/kg/day	3.0E-04	mg/kg/day	2.9E-02
				Cadmium	7.1E-01	ug/L	3.6E-07	mg/kg/day	---	(mg/kg/day) ⁻¹	---	3.5E-06	mg/kg/day	5.0E-04	mg/kg/day	6.9E-03
				Chromium ⁺³	7.1E+01	ug/L	3.6E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	3.5E-04	mg/kg/day	1.5E+00	mg/kg/day	2.3E-04
				Chromium ⁺⁶	5.5E+00	ug/L	2.8E-06	mg/kg/day	5.0E-01	(mg/kg/day) ⁻¹	1.4E-06	2.7E-05	mg/kg/day	3.0E-03	mg/kg/day	9.0E-03
				Cobalt	6.4E+00	ug/L	3.2E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	3.1E-05	mg/kg/day	3.0E-04	mg/kg/day	1.0E-01
				Iron	5.0E+03	ug/L	2.5E-03	mg/kg/day	---	(mg/kg/day) ⁻¹	---	2.5E-02	mg/kg/day	7.0E-01	mg/kg/day	3.5E-02
				Manganese	1.3E+02	ug/L	6.5E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	6.3E-04	mg/kg/day	2.4E-02	mg/kg/day	2.6E-02
				Mercury	1.5E-01	ug/L	7.5E-08	mg/kg/day	---	(mg/kg/day) ⁻¹	---	7.3E-07	mg/kg/day	1.6E-04	mg/kg/day	4.6E-03
				Vanadium	1.8E+01	ug/L	9.0E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	8.8E-05	mg/kg/day	5.0E-03	mg/kg/day	1.8E-02
				Bis(2-Ethylhexyl) Phthalate	4.7E+00	ug/L	2.4E-06	mg/kg/day	1.4E-02	(mg/kg/day) ⁻¹	3.3E-08	2.3E-05	mg/kg/day	2.0E-02	mg/kg/day	1.2E-03
				1,1,2-Trichloroethane	8.3E-01	ug/L	4.2E-07	mg/kg/day	5.7E-02	(mg/kg/day) ⁻¹	2.4E-08	4.0E-06	mg/kg/day	---	mg/kg/day	---
				1,1-Dichloroethane	9.1E+01	ug/L	4.6E-05	mg/kg/day	5.7E-03	(mg/kg/day) ⁻¹	2.6E-07	4.4E-04	mg/kg/day	---	mg/kg/day	---
				1,1-Dichloroethene	2.4E+01	ug/L	1.2E-05	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.2E-04	mg/kg/day	5.0E-02	mg/kg/day	2.4E-03
				1,2,4-Trichlorobenzene	1.1E+01	ug/L	5.5E-06	mg/kg/day	2.9E-02	(mg/kg/day) ⁻¹	1.6E-07	5.3E-05	mg/kg/day	1.0E-02	mg/kg/day	5.3E-03
				1,2-Dichloroethane	1.1E+01	ug/L	5.7E-06	mg/kg/day	9.1E-02	(mg/kg/day) ⁻¹	5.2E-07	5.5E-05	mg/kg/day	2.0E-02	mg/kg/day	2.8E-03
				1,2-Dichloropropane	9.7E-01	ug/L	4.9E-07	mg/kg/day	3.6E-02	(mg/kg/day) ⁻¹	1.8E-08	4.8E-06	mg/kg/day	9.0E-02	mg/kg/day	5.3E-05
				1,4-Dioxane	2.0E+03	ug/L	9.9E-04	mg/kg/day	1.0E-01	(mg/kg/day) ⁻¹	9.9E-05	9.6E-03	mg/kg/day	3.0E-02	mg/kg/day	3.2E-01
				Acetone	3.6E+02	ug/L	1.8E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.8E-03	mg/kg/day	9.0E-01	mg/kg/day	1.9E-03
				Benzene	6.0E+01	ug/L	3.0E-05	mg/kg/day	5.5E-02	(mg/kg/day) ⁻¹	1.6E-06	2.9E-04	mg/kg/day	4.0E-03	mg/kg/day	7.3E-02
				Bromodichlormethane	1.7E+00	ug/L	8.8E-07	mg/kg/day	6.2E-02	(mg/kg/day) ⁻¹	5.5E-08	8.6E-06	mg/kg/day	2.0E-02	mg/kg/day	4.3E-04
				Chlorobenzene	2.3E+00	ug/L	1.2E-06	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.1E-05	mg/kg/day	2.0E-02	mg/kg/day	5.7E-04
				Chloroform	1.8E+01	ug/L	9.3E-06	mg/kg/day	3.1E-02	(mg/kg/day) ⁻¹	2.9E-07	9.0E-05	mg/kg/day	1.0E-02	mg/kg/day	9.0E-03
				Cis-1,2-Dichloroethene	2.3E+02	ug/L	1.2E-04	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.1E-03	mg/kg/day	2.0E-03	mg/kg/day	5.7E-01
				Dibromochlormethane	6.8E-01	ug/L	3.4E-07	mg/kg/day	8.4E-02	(mg/kg/day) ⁻¹	2.9E-08	3.3E-06	mg/kg/day	2.0E-02	mg/kg/day	1.7E-04
				Ethylbenzene	8.8E-01	ug/L	4.4E-07	mg/kg/day	1.1E-02	(mg/kg/day) ⁻¹	4.9E-09	4.3E-06	mg/kg/day	1.0E-01	mg/kg/day	4.3E-05
				Methyl Cyclohexane	2.8E-01	ug/L	1.4E-07	mg/kg/day	---	(mg/kg/day) ⁻¹	---	1.4E-06	mg/kg/day	---	mg/kg/day	---
				Methylene Chloride	4.9E-01	ug/L	2.5E-07	mg/kg/day	7.5E-03	(mg/kg/day) ⁻¹	1.9E-09	2.4E-06	mg/kg/day	6.0E-02	mg/kg/day	4.0E-05
				Tetrachloroethene	2.2E+02	ug/L	1.1E-04	mg/kg/day	2.1E-03	(mg/kg/day) ⁻¹	2.3E-07	1.1E-03	mg/kg/day	6.0E-03	mg/kg/day	1.8E-01
				Trichloroethene	7.4E+02	ug/L	3.7E-04	mg/kg/day	4.6E-02	(mg/kg/day) ⁻¹	1.7E-05	3.6E-03	mg/kg/day	5.0E-04	mg/kg/day	7.2E+00
				Vinyl Chloride	1.2E+01	ug/L	5.8E-06	mg/kg/day	7.2E-01	(mg/kg/day) ⁻¹	4.2E-06	5.7E-05	mg/kg/day	3.0E-03	mg/kg/day	1.9E-02
Exp. Route Total												1.3E-04			8.6E+00	

TABLE 7.3 CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Industrial/Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations						Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD		Hazard Quotient		
							Value	Units	Value	Units		Value	Units	Value	Units			
Bedrock/Till Groundwater	Tap Water	Tap Water	Dermal	Aluminum	3.0E+03	ug/L	4.2E-06	mg/kg/day	0.0E+00	(mg/kg/day) ¹	0.0E+00	4.1E-05	mg/kg/day	1.0E+00	mg/kg/day	4.1E-05		
				Antimony	1.5E+00	ug/L	2.1E-09	mg/kg/day	---	(mg/kg/day) ¹	---	2.1E-08	mg/kg/day	6.0E-05	mg/kg/day	3.5E-04		
				Arsenic	1.8E+00	ug/L	2.5E-09	mg/kg/day	1.5E+00	(mg/kg/day) ¹	3.8E-09	2.5E-08	mg/kg/day	3.0E-04	mg/kg/day	8.2E-05		
				Cadmium	7.1E-01	ug/L	1.0E-09	mg/kg/day	---	(mg/kg/day) ¹	---	9.8E-09	mg/kg/day	2.5E-05	mg/kg/day	3.9E-04		
				Chromium ⁺³	7.1E+01	ug/L	1.0E-07	mg/kg/day	---	(mg/kg/day) ¹	---	9.9E-07	mg/kg/day	2.0E-02	mg/kg/day	5.1E-05		
				Chromium ⁺⁶	5.5E+00	ug/L	7.9E-09	mg/kg/day	2.0E+01	(mg/kg/day) ¹	1.6E-07	7.7E-08	mg/kg/day	7.5E-05	mg/kg/day	1.0E-03		
				Cobalt	6.4E+00	ug/L	9.1E-09	mg/kg/day	---	(mg/kg/day) ¹	---	8.8E-08	mg/kg/day	3.0E-04	mg/kg/day	2.9E-04		
				Iron	5.0E+03	ug/L	7.2E-06	mg/kg/day	---	(mg/kg/day) ¹	---	7.0E-05	mg/kg/day	7.0E-01	mg/kg/day	9.9E-05		
				Manganese	1.3E+02	ug/L	1.8E-07	mg/kg/day	---	(mg/kg/day) ¹	---	1.8E-06	mg/kg/day	9.6E-04	mg/kg/day	1.9E-03		
				Mercury	1.5E-01	ug/L	2.1E-10	mg/kg/day	---	(mg/kg/day) ¹	---	2.1E-09	mg/kg/day	1.6E-04	mg/kg/day	1.3E-05		
				Vanadium	1.8E+01	ug/L	2.6E-08	mg/kg/day	---	(mg/kg/day) ¹	---	2.5E-07	mg/kg/day	5.0E-03	mg/kg/day	5.0E-05		
				Bis(2-Ethylhexyl) Phthalate	4.7E+00	ug/L	2.1E-06	mg/kg/day	1.4E-02	(mg/kg/day) ¹	3.0E-08	2.1E-05	mg/kg/day	2.0E-02	mg/kg/day	1.0E-03		
				1,1,2-Trichloroethane	8.3E-01	ug/L	2.3E-08	mg/kg/day	5.7E-02	(mg/kg/day) ¹	1.3E-09	2.2E-07	mg/kg/day	4.0E-03	mg/kg/day	5.5E-05		
				1,1-Dichloroethane	9.1E+01	ug/L	2.1E-06	mg/kg/day	5.7E-03	(mg/kg/day) ¹	1.2E-08	2.0E-05	mg/kg/day	2.0E-01	mg/kg/day	1.0E-04		
				1,1-Dichloroethene	2.4E+01	ug/L	9.9E-07	mg/kg/day	---	(mg/kg/day) ¹	---	9.6E-06	mg/kg/day	5.0E-02	mg/kg/day	1.9E-04		
				1,2,4-Trichlorobenzene	1.1E+01	ug/L	4.2E-06	mg/kg/day	2.9E-02	(mg/kg/day) ¹	1.2E-07	4.1E-05	mg/kg/day	1.0E-02	mg/kg/day	4.1E-03		
				1,2-Dichloroethane	1.1E+01	ug/L	1.6E-07	mg/kg/day	9.1E-02	(mg/kg/day) ¹	1.5E-08	1.6E-06	mg/kg/day	2.0E-02	mg/kg/day	7.9E-05		
				1,2-Dichloropropane	9.7E-01	ug/L	2.9E-08	mg/kg/day	3.6E-02	(mg/kg/day) ¹	1.0E-09	2.8E-07	mg/kg/day	9.0E-02	mg/kg/day	3.1E-06		
				1,4-Dioxane	2.0E+03	ug/L	2.1E-06	mg/kg/day	1.0E-01	(mg/kg/day) ¹	2.1E-07	2.0E-05	mg/kg/day	3.0E-02	mg/kg/day	6.7E-04		
				Acetone	3.6E+02	ug/L	---	mg/kg/day	---	(mg/kg/day) ¹	---	---	mg/kg/day	9.0E-01	mg/kg/day	---		
				Benzene	6.0E+01	ug/L	2.7E-06	mg/kg/day	5.5E-02	(mg/kg/day) ¹	1.5E-07	2.6E-05	mg/kg/day	4.0E-03	mg/kg/day	6.5E-03		
				Bromodichloromethane	1.7E+00	ug/L	4.2E-08	mg/kg/day	6.2E-02	(mg/kg/day) ¹	2.6E-09	4.1E-07	mg/kg/day	2.0E-02	mg/kg/day	2.0E-05		
				Chlorobenzene	2.3E+00	ug/L	2.5E-07	mg/kg/day	---	(mg/kg/day) ¹	---	2.4E-06	mg/kg/day	2.0E-02	mg/kg/day	1.2E-04		
				Chloroform	1.8E+01	ug/L	4.9E-07	mg/kg/day	3.1E-02	(mg/kg/day) ¹	1.5E-08	4.8E-06	mg/kg/day	1.0E-02	mg/kg/day	4.8E-04		
				Cis-1,2-Dichloroethene	2.3E+02	ug/L	6.1E-06	mg/kg/day	---	(mg/kg/day) ¹	---	6.0E-05	mg/kg/day	2.0E-03	mg/kg/day	3.0E-02		
				Dibromochloromethane	6.8E-01	ug/L	---	mg/kg/day	1.4E-01	(mg/kg/day) ¹	---	---	mg/kg/day	2.0E-02	mg/kg/day	---		
				Ethylbenzene	8.8E-01	ug/L	1.6E-07	mg/kg/day	1.1E-02	(mg/kg/day) ¹	1.7E-09	1.5E-06	mg/kg/day	1.0E-01	mg/kg/day	1.5E-05		
				Methyl Cyclohexane	2.8E-01	ug/L	---	mg/kg/day	---	(mg/kg/day) ¹	---	---	mg/kg/day	--	mg/kg/day	---		
				Methylene Chloride	4.9E-01	ug/L	5.4E-09	mg/kg/day	7.5E-03	(mg/kg/day) ¹	4.1E-11	5.3E-08	mg/kg/day	6.0E-02	mg/kg/day	8.8E-07		
				Tetrachloroethene	2.2E+02	ug/L	3.8E-05	mg/kg/day	2.1E-03	(mg/kg/day) ¹	7.9E-08	3.7E-04	mg/kg/day	6.0E-03	mg/kg/day	6.1E-02		
				Trichloroethene	7.4E+02	ug/L	3.7E-05	mg/kg/day	4.6E-02	(mg/kg/day) ¹	1.7E-06	3.6E-04	mg/kg/day	5.0E-04	mg/kg/day	7.3E-01		
				Vinyl Chloride	1.2E+01	ug/L	1.8E-07	mg/kg/day	7.2E-01	(mg/kg/day) ¹	1.3E-07	1.7E-06	mg/kg/day	3.0E-03	mg/kg/day	5.7E-04		
				Exp. Route Total							2.6E-06					8.4E-01		
				Exposure Point Total							1.3E-04					9.5E+00		
				Exposure Medium Total							1.3E-04					9.5E+00		
Medium and Receptor Total											1.3E-04					9.5E+00		

Table 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient					
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total
Bedrock/Till Groundwater	Tap Water	Tap Water	Aluminum	---	---	---	---	---	Neurologic effects	8.E-02	---	2E-04	---	8.E-02
			Antimony	---	---	---	---	---	Blood, pancreas	1.E-01	---	2E-03	---	1.E-01
			Arsenic	3E-05	---	7E-08	---	3E-05	Skin	2.E-01	---	4E-04	---	2.E-01
			Cadmium	---	---	---	---	---	Kidney	4.E-02	---	2E-03	---	4.E-02
			Chromium ⁺³	---	---	---	---	---	None Reported	1.E-03	---	2E-04	---	2.E-03
			Chromium ⁺⁶	3E-05	---	3E-06	---	4E-05	None Reported	5.E-02	---	5E-03	---	6.E-02
			Cobalt	---	---	---	---	---	Thyroid	6.E-01	---	1E-03	---	6.E-01
			Iron	---	---	---	---	---	Gastrointestinal	2.E-01	---	4E-04	---	2.E-01
			Manganese	---	---	---	---	---	CNS	1.E-01	---	8E-03	---	2.E-01
			Mercury	---	---	---	---	---	CNS	3.E-02	---	6E-05	---	3.E-02
			Vanadium	---	---	---	---	---	---	1.E-01	---	2E-04	---	1.E-01
			Bis(2-Ethylhexyl) Phthalate	8E-07	---	8E-07	---	2E-06	Liver	6.E-03	---	7E-03	---	1.E-02
			1,1,2-Trichloroethane	6E-07	---	3E-08	---	6E-07	Blood	--	---	3E-04	---	3.E-04
			1,1-Dichloroethane	6E-06	---	3E-07	---	6E-06	Kidney	--	---	6E-04	---	6.E-04
			1,1-Dichloroethene	---	---	---	---	---	Liver	1.E-02	---	1E-03	---	1.E-02
			1,2,4-Trichlorobenzene	4E-06	---	3E-06	---	7E-06	Kidney	3.E-02	---	3E-02	---	6.E-02
			1,2-Dichloroethane	1E-05	---	4E-07	---	1E-05	Neurologic effects	2.E-02	---	5E-04	---	2.E-02
			1,2-Dichloropropane	4E-07	---	3E-08	---	4E-07		---	3.E-04	---	2E-05	3.E-04
			1,4-Dioxane	2E-03	---	5E-06	---	2E-03	Liver; Kidney	2.E+00	---	4E-03	---	2.E+00
			Acetone	---	---	---	---	---	Kidney	1.E-02	---	---	---	1.E-02
			Benzene	4E-05	---	4E-06	---	4E-05	Blood	4.E-01	---	4E-02	---	4.E-01
			Bromodichloromethane	1E-06	---	7E-08	---	1E-06	Kidney	2.E-03	---	1E-04	---	3.E-03
			Chlorobenzene	---	---	---	---	---	Liver	3.E-03	---	8E-04	---	4.E-03
			Chloroform	7E-06	---	4E-07	---	7E-06	Liver	5.E-02	---	3E-03	---	5.E-02
			Cis-1,2-Dichloroethene	---	---	---	---	---	Kidney	3.E+00	---	2E-01	---	3.E+00
			Dibromochloromethane	7E-07	---	---	---	7E-07	Liver	9.E-04	---	---	---	9.E-04
			Ethylbenzene	1E-07	---	4E-08	---	2E-07	Liver and Kidney	2.E-04	---	1E-04	---	3.E-04
			Methyl Cyclohexane	---	---	---	---	---	---	--	---	---	---	---
			Methylene Chloride	4E-08	---	1E-09	---	4E-08	Liver	2.E-04	---	6E-06	---	2.E-04
			Tetrachloroethene	5E-06	---	2E-06	---	7E-06	Neurologic effects	1.E+00	---	4E-01	---	1.E+00
			Trichloroethene	4E-04	---	5E-05	---	4E-04		4.E+01	---	5E+00	---	4.E+01
			Vinyl Chloride	1E-04	---	3E-06	---	1E-04	Heart; Thymus; Blood	1.E-01	---	4E-03	---	1.E-01
			Chemical Total	3E-03	---	7E-05	---	3E-03		5.E+01	---	5.E+00	---	5.E+01
			Radionuclide Total				---	3E-03						
			Exposure Point Total					3E-03						5.E+01
			Exposure Medium Total					3E-03						5.E+01

Table 9.1.RME
SUMMARY OR RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient					
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total
Bedrock/Till Groundwater	Tap Water	Water Vapors from Showerhead	Bis(2-Ethylhexyl) Phthalate	---	2.E-14	---	---	2.E-14		---	---	---	---	---
			1,1,2-Trichloroethane	---	---	---	---	---		---	---	---	---	---
			1,1-Dichloroethane	---	3.E-11	---	---	3.E-11		---	---	---	---	---
			1,1-Dichloroethene	---	---	---	---	---	Liver	---	5.E-08	---	---	5.E-08
			1,2,4-Trichlorobenzene	---	---	---	---	---	Urinary Tract	---	2.E-06	---	---	2.E-06
			1,2-Dichloroethane	---	5.E-11	---	---	5.E-11		---	2.E-09	---	---	2.E-09
			1,2-Dichloropropane	---	2.E-12	---	---	2.E-12	Nasal	---	9.E-08	---	---	9.E-08
			1,4-Dioxane	---	4.E-10	---	---	4.E-10		---	4.E-08	---	---	4.E-08
			Acetone	---	---	---	---	---		---	3.E-09	---	---	3.E-09
			Benzene	---	8.E-11	---	---	8.E-11	Blood	---	8.E-07	---	---	8.E-07
			Bromodichloromethane	---	1.E-11	---	---	1.E-11		---	---	---	---	---
			Chlorobenzene	---	---	---	---	---	Liver; Kidney	---	2.E-08	---	---	2.E-08
			Chloroform	---	8.E-11	---	---	8.E-11		---	8.E-08	---	---	8.E-08
			Cis-1,2-Dichloroethene	---	---	---	---	---		---	---	---	---	---
			Dibromochloromethane	---	3.E-12	---	---	3.E-12		---	---	---	---	---
			Ethylbenzene	---	3.E-13	---	---	3.E-13	Development	---	3.E-10	---	---	3.E-10
			Methyl Cyclohexane	---	---	---	---	---		---	---	---	---	---
			Methylene Chloride	---	4.E-14	---	---	4.E-14		---	2.E-10	---	---	2.E-10
			Tetrachloroethene	---	9.E-12	---	---	9.E-12	Neurological	---	2.E-06	---	---	2.E-06
			Trichloroethene	---	5.E-10	---	---	5.E-10	Thymus; Heart	---	1.E-04	---	---	1.E-04
			Vinyl Chloride	---	1.E-11	---	---	1.E-11	Liver	---	5.E-08	---	---	5.E-08
			Chemical Total	---	1.E-09	---	---	1.E-09		---	1.E-04	---	---	1.E-04
			Radionuclide Total					---						---
			Exposure Point Total					1.E-09						1.E-04
			Exposure Medium Total					1.E-09						1.E-04
			Groundwater Total					3.E-03						5.E+01
			Receptor Total					3.E-03						5.E+01

Total Risk Across All Media = 3.E-03Total Hazard Across All Media = 5E+01

Total Liver HI Across All Media = 4.E+00
 Total Blood HI Across All Media = 5.E+01
 Total Skin HI Across All Media = 2.E-01
 Total CNS HI Across All Media = 2.E+00
 Total Kidney HI Across All Media = 7.E+00
 Total Pancreas HI Across All Media = 1.E-01
 Total Development HI Across All Media = 3.E-10
 Total Nasal HI Across All Media = 9.E-08
 Total Gastrointestinal HI Across All Media = 2.E-01
 Total Thyroid HI Across All Media = 5.E+01
 Total Urinary Tract HI Across All Media = 2.E-06
 Total Developmental HI Across All Media = 3.E-10
 Total Heart HI Across All Media = 4.E+01

Table 9.1.CT
SUMMARY OR RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient					
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total
Bedrock/Till Groundwater	Tap Water	Tap Water	Aluminum	---	---	---	---	---	Neurologic effects	4.E-02	---	7.E-05	---	4.E-02
			Antimony	---	---	---	---	---	Blood, pancreas	5.E-02	---	6.E-04	---	5.E-02
			Arsenic	5E-06	---	8E-09	---	5E-06	Skin	8.E-02	---	1E-04	---	8.E-02
			Cadmium	---	---	---	---	---	Kidney	2.E-02	---	7.E-04	---	2.E-02
			Chromium ⁺³	---	---	---	---	---	None Reported	7.E-04	---	9.E-05	---	7.E-04
			Chromium ⁺⁶	5E-06	---	4E-07	---	5E-06	None Reported	3.E-02	---	2.E-03	---	3.E-02
			Cobalt	---	---	---	---	---	Thyroid	3.E-01	---	5.E-04	---	3.E-01
			Iron	---	---	---	---	---	Gastrointestinal	1.E-01	---	2.E-04	---	1.E-01
			Manganese	---	---	---	---	---	CNS	7.E-02	---	3.E-03	---	8.E-02
			Mercury	---	---	---	---	---	CNS	1.E-02	---	2.E-05	---	1.E-02
			Vanadium	---	---	---	---	---	---	5.E-02	---	9.E-05	---	5.E-02
			Bis(2-Ethylhexyl) Phthalate	1E-07	---	1E-07	---	3E-07	Liver	3.E-03	---	4.E-03	---	7.E-03
			1,1,2-Trichloroethane	8E-08	---	6E-09	---	9E-08	Blood	--	---	2.E-04	---	2.E-04
			1,1-Dichloroethane	9E-07	---	6E-08	---	1E-06	Kidney	--	---	4.E-04	---	4.E-04
			1,1-Dichloroethene	---	---	---	---	---	Liver	7.E-03	---	8.E-04	---	7.E-03
			1,2,4-Trichlorobenzene	6E-07	---	6E-07	---	1E-06	Kidney	1.E-02	---	2.E-02	---	3.E-02
			1,2-Dichloroethane	2E-06	---	7E-08	---	2E-06	Neurologic effects	8.E-03	---	3.E-04	---	8.E-03
			1,2-Dichloropropane	6E-08	---	5E-09	---	7E-08		--	---	1.E-04	---	2.E-04
			1,4-Dioxane	3E-04	---	1E-06	---	3E-04	Liver; Kidney	9.E-01	---	3.E-03	---	9.E-01
			Acetone	---	---	---	---	---	Kidney	5.E-03	---	---	---	5.E-03
			Benzene	6E-06	---	7E-07	---	6E-06	Blood	2.E-01	---	3.E-02	---	2.E-01
			Bromodichloromethane	2E-07	---	1E-08	---	2E-07	Kidney	1.E-03	---	8.E-05	---	1.E-03
			Chlorobenzene	---	---	---	---	---	Liver	2.E-03	---	5.E-04	---	2.E-03
			Chloroform	1E-06	---	8E-08	---	1E-06	Liver	3.E-02	---	2.E-03	---	3.E-02
			Cis-1,2-Dichloroethene	---	---	---	---	---	Kidney	2.E+00	---	1.E-01	---	2.E+00
			Dibromochloromethane	1E-07	---	---	---	1E-07	Liver	5.E-04	---	---	---	5.E-04
			Ethylbenzene	2E-08	---	8E-09	---	3E-08	Liver and Kidney	1.E-04	---	6.E-05	---	2.E-04
			Methyl Cyclohexane	---	---	---	---	---	--	--	---	---	---	
			Methylene Chloride	6E-09	---	2E-10	---	7E-09	Liver	1.E-04	---	3.E-06	---	1.E-04
			Tetrachloroethene	8E-07	---	4E-07	---	1E-06	Neurologic effects	5.E-01	---	2.E-01	---	7.E-01
			Trichloroethene	6E-05	---	9E-06	---	7E-05		2.E+01	---	3E+00	---	2.E+01
			Vinyl Chloride	1E-05	---	6E-07	---	2E-05	Liver	5.E-02	---	2.E-03	---	6.E-02
			Chemical Total	4E-04	---	1E-05	---	5E-04		2.E+01	---	3.E+00	---	3.E+01
			Radionuclide Total					---						
			Exposure Point Total					5E-04					3.E+01	
			Exposure Medium Total					5E-04					3.E+01	

Table 9.1.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient					
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total
Bedrock/Till Groundwater	Tap Water	Water Vapors from Showerhead	Bis(2-Ethylhexyl) Phthalate	---	5.E-16	---	---	5.E-16	---	---	---	---	---	---
			1,1,2-Trichloroethane	---	---	---	---	---	---	---	---	---	---	---
			1,1-Dichloroethane	---	5.E-13	---	---	5.E-13	---	---	---	---	---	---
			1,1-Dichloroethene	---	---	---	---	---	Liver	---	4.E-09	---	---	4.E-09
			1,2,4-Trichlorobenzene	---	---	---	---	---	Urinary Tract	---	1.E-07	---	---	1.E-07
			1,2-Dichloroethane	---	1.E-12	---	---	1.E-12	---	---	1.E-10	---	---	1.E-10
			1,2-Dichloropropane	---	3.E-14	---	---	3.E-14	Nasal	---	7.E-09	---	---	7.E-09
			1,4-Dioxane	---	9.E-12	---	---	9.E-12	---	---	3.E-09	---	---	3.E-09
			Acetone	---	---	---	---	---	---	---	2.E-10	---	---	2.E-10
			Benzene	---	2.E-12	---	---	2.E-12	Blood	---	6.E-08	---	---	6.E-08
			Bromodichloromethane	---	2.E-13	---	---	2.E-13	---	---	---	---	---	---
			Chlorobenzene	---	---	---	---	---	Liver; Kidney	---	1.E-09	---	---	1.E-09
			Chloroform	---	2.E-12	---	---	2.E-12	---	---	6.E-09	---	---	6.E-09
			Cis-1,2-Dichloroethene	---	---	---	---	---	---	---	---	---	---	---
			Dibromochloromethane	---	7.E-14	---	---	7.E-14	---	---	---	---	---	---
			Ethylbenzene	---	7.E-15	---	---	7.E-15	Development	---	2.E-11	---	---	2.E-11
			Methyl Cyclohexane	---	---	---	---	---	---	---	---	---	---	---
			Methylene Chloride	---	1.E-15	---	---	1.E-15	---	---	2.E-11	---	---	2.E-11
			Tetrachloroethene	---	2.E-13	---	---	2.E-13	Neurological	---	1.E-07	---	---	1.E-07
			Trichloroethene	---	1.E-11	---	---	1.E-11	Thymus; Heart	---	1.E-05	---	---	1.E-05
			Vinyl Chloride	---	2.E-13	---	---	2.E-13	Liver	---	4.E-09	---	---	4.E-09
			Chemical Total	---	3.E-11	---	---	3.E-11	---	---	1.E-05	---	---	1.E-05
			Radionuclide Total	---										---
			Exposure Point Total					3.E-11						1.E-05
			Exposure Medium Total					3.E-11						1.E-05
			Groundwater Total					5.E-04						3.E+01
			Receptor Total					5.E-04						3.E+01

Total Risk Across All Media = 5.E-04Total Hazard Across All Media = 3.E+01

Total Liver HI Across All Media = 2.E+00
 Total Blood HI Across All Media = 2.E+01
 Total Skin HI Across All Media = 8.E-02
 Total CNS HI Across All Media = 9.E-01
 Total Kidney HI Across All Media = 4.E+00
 Total Pancreas HI Across All Media = 5.E-02
 Total Development HI Across All Media = 2.E-11
 Total Nasal HI Across All Media = 7.E-09
 Total Gastrointestinal HI Across All Media = 1.E-01
 Total Thyroid HI Across All Media = 2.E+01
 Total Urinary Tract HI Across All Media = 1.E-07
 Total Developmental HI Across All Media = 2.E-11
 Total Heart HI Across All Media = 2.E+01

Table 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient					
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total
Bedrock/Till Groundwater	Tap Water	Tap Water	Aluminum	---	---	---	---	---	Neurologic effects	2.E-01	---	6.E-04	---	2.E-01
			Antimony	---	---	---	---	---	Blood, pancreas	2.E-01	---	5.E-03	---	2.E-01
			Arsenic	1E-05	---	4E-08	---	1E-05	Skin	4.E-01	---	1E-03	---	4.E-01
			Cadmium	---	---	---	---	---	Kidney	9.E-02	---	5.E-03	---	1.E-01
			Chromium ⁺³	---	---	---	---	---	None Reported	3.E-03	---	7.E-04	---	4.E-03
			Chromium ⁺⁶	8E-05	---	1E-05	---	9E-05	None Reported	1.E-01	---	1E-02	---	1.E-01
			Cobalt	---	---	---	---	---	Thyroid	1.E+00	---	4.E-03	---	1.E+00
			Iron	---	---	---	---	---	Gastrointestinal	5.E-01	---	1E-03	---	5.E-01
			Manganese	---	---	---	---	---	CNS	3.E-01	---	3E-02	---	4.E-01
			Mercury	---	---	---	---	---	CNS	6.E-02	---	2E-04	---	6.E-02
			Vanadium	---	---	---	---	---	---	2.E-01	---	7.E-04	---	2.E-01
			Bis(2-Ethylhexyl) Phthalate	4E-07	---	4E-07	---	7E-07	Liver	2.E-02	---	2E-02	---	3.E-02
			1,1,2-Trichloroethane	3E-07	---	2E-08	---	3E-07	Blood	--	---	8E-04	---	8.E-04
			1,1-Dichloroethane	3E-06	---	1E-07	---	3E-06	Kidney	--	---	1E-03	---	1.E-03
			1,1-Dichloroethene	---	---	---	---	---	Liver	3.E-02	---	3E-03	---	3.E-02
			1,2,4-Trichlorobenzene	2E-06	---	1E-06	---	3E-06	Kidney	7.E-02	---	6E-02	---	1.E-01
			1,2-Dichloroethane	6E-06	---	2E-07	---	6E-06	Neurologic effects	4.E-02	---	1E-03	---	4.E-02
			1,2-Dichloropropane	2E-07	---	1E-08	---	2E-07		--	---	7.E-04	---	7.E-04
			1,4-Dioxane	1E-03	---	2E-06	---	1E-03	Liver; Kidney	4.E+00	---	1E-02	---	4.E+00
			Acetone	---	---	---	---	---	Kidney	3.E-02	---	---	---	3.E-02
			Benzene	2E-05	---	2E-06	---	2E-05	Blood	1.E+00	---	9E-02	---	1.E+00
			Bromodichloromethane	6E-07	---	3E-08	---	6E-07	Kidney	6.E-03	---	3E-04	---	6.E-03
			Chlorobenzene	---	---	---	---	---	Liver	7.E-03	---	2E-03	---	9.E-03
			Chloroform	3E-06	---	2E-07	---	3E-06	Liver	1.E-01	---	7E-03	---	1.E-01
			Cis-1,2-Dichloroethene	---	---	---	---	---	Kidney	8.E+00	---	4E-01	---	8.E+00
			Dibromochloromethane	3E-07	---	---	---	3E-07	Liver	2.E-03	---	---	---	2.E-03
			Ethylbenzene	5E-08	---	2E-08	---	7E-08	Liver and Kidney	6.E-04	---	2E-04	---	8.E-04
			Methyl Cyclohexane	---	---	---	---	---	--	--	---	---	---	
			Methylene Chloride	2E-08	---	5E-10	---	2E-08	Liver	5.E-04	---	1E-05	---	5.E-04
			Tetrachloroethene	2E-06	---	1E-06	---	3E-06	Neurologic effects	2.E+00	---	9E-01	---	3.E+00
			Trichloroethene	1E-03	---	1E-04	---	1E-03		9.E+01	---	1E+01	---	1.E+02
			Vinyl Chloride	9E-05	---	3E-06	---	9E-05	Heart; Thymus; Blood	2.E-01	---	8E-03	---	3.E-01
			Chemical Total	2E-03	---	1E-04	---	2E-03		1.E+02	---	1.E+01	---	1.E+02
			Radionuclide Total					---						
			Exposure Point Total					2E-03					1.E+02	
			Exposure Medium Total					2E-03					1.E+02	

Table 9.2.RME
SUMMARY OR RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient					
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total
Bedrock/Till Groundwater	Tap Water	Water Vapors from Showerhead	Bis(2-Ethylhexyl) Phthalate	---	1.E-14	---	---	1.E-14		---	---	---	---	---
			1,1,2-Trichloroethane	---	---	---	---	---		---	---	---	---	---
			1,1-Dichloroethane	---	2.E-11	---	---	2.E-11		---	---	---	---	---
			1,1-Dichloroethene	---	---	---	---	---	Liver	---	2.E-07	---	---	2.E-07
			1,2,4-Trichlorobenzene	---	---	---	---	---	Urinary Tract	---	6.E-06	---	---	6.E-06
			1,2-Dichloroethane	---	3.E-11	---	---	3.E-11		---	6.E-09	---	---	6.E-09
			1,2-Dichloropropane	---	1.E-12	---	---	1.E-12	Nasal	---	3.E-07	---	---	3.E-07
			1,4-Dioxane	---	3.E-10	---	---	3.E-10		---	1.E-07	---	---	1.E-07
			Acetone	---	---	---	---	---		---	9.E-09	---	---	9.E-09
			Benzene	---	5.E-11	---	---	5.E-11	Blood	---	2.E-06	---	---	2.E-06
			Bromodichloromethane	---	7.E-12	---	---	7.E-12		---	---	---	---	---
			Chlorobenzene	---	---	---	---	---	Liver; Kidney	---	5.E-08	---	---	5.E-08
			Chloroform	---	5.E-11	---	---	5.E-11		---	2.E-07	---	---	2.E-07
			Cis-1,2-Dichloroethene	---	---	---	---	---		---	---	---	---	---
			Dibromochloromethane	---	2.E-12	---	---	2.E-12		---	---	---	---	---
			Ethylbenzene	---	2.E-13	---	---	2.E-13	Development	---	9.E-10	---	---	9.E-10
			Methyl Cyclohexane	---	---	---	---	---		---	---	---	---	---
			Methylene Chloride	---	3.E-14	---	---	3.E-14		---	7.E-10	---	---	7.E-10
			Tetrachloroethene	---	6.E-12	---	---	6.E-12	Neurological	---	6.E-06	---	---	6.E-06
			Trichloroethene	---	2.E-09	---	---	2.E-09	Thymus; Heart	---	4.E-04	---	---	4.E-04
			Vinyl Chloride	---	1.E-11	---	---	1.E-11	Liver	---	2.E-07	---	---	2.E-07
			Chemical Total	---	2.E-09	---	---	2.E-09		---	5.E-04	---	---	5.E-04
			Radionuclide Total	---				---						---
			Exposure Point Total					2.E-09						5.E-04
			Exposure Medium Total					2.E-09						5.E-04
			Groundwater Total					2.E-03						1.E+02
			Receptor Total					2.E-03						1.E+02

Total Risk Across All Media = 2.E-03Total Hazard Across All Media = 1.E+02Total Liver HI Across All Media = 9.E+00Total Blood HI Across All Media = 1.E+02Total Skin HI Across All Media = 4.E-01Total CNS HI Across All Media = 4.E+00Total Kidney HI Across All Media = 2.E+01Total Pancreas HI Across All Media = 2.E-01Total Development HI Across All Media = 9.E-10Total Nasal HI Across All Media = 3.E-07Total Gastrointestinal HI Across All Media = 5.E-01Total Thyroid HI Across All Media = 1.E+02Total Urinary Tract HI Across All Media = 6.E-06Total Developmental HI Across All Media = 9.E-10Total Heart HI Across All Media = 1.E+02

Table 9.2.CT
SUMMARY OR RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient					
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total
Bedrock/Till Groundwater	Tap Water	Tap Water	Aluminum	---	---	---	---	---	Neurologic effects	1.E-01	---	2E-04	---	1.E-01
			Antimony	---	---	---	---	---	Blood, pancreas	1.E-01	---	1E-03	---	1.E-01
			Arsenic	7E-06	---	1E-08	---	7E-06	Skin	2.E-01	---	4E-04	---	2.E-01
			Cadmium	---	---	---	---	---	Kidney	5.E-02	---	2E-03	---	5.E-02
			Chromium ⁺³	---	---	---	---	---	None Reported	2.E-03	---	2E-04	---	2.E-03
			Chromium ⁺⁶	4E-05	---	3E-06	---	4E-05	None Reported	6.E-02	---	4E-03	---	6.E-02
			Cobalt	---	---	---	---	---	Thyroid	7.E-01	---	1E-03	---	7.E-01
			Iron	---	---	---	---	---	Gastrointestinal	2.E-01	---	4E-04	---	2.E-01
			Manganese	---	---	---	---	---	CNS	2.E-01	---	8E-03	---	2.E-01
			Mercury	---	---	---	---	---	CNS	3.E-02	---	6E-05	---	3.E-02
			Vanadium	---	---	---	---	---	---	1.E-01	---	2E-04	---	1.E-01
			Bis(2-Ethylhexyl) Phthalate	2E-07	---	2E-07	---	4E-07	Liver	8.E-03	---	8E-03	---	2.E-02
			1,1,2-Trichloroethane	1E-07	---	9E-09	---	1E-07	Blood	--	---	4E-04	---	4.E-04
			1,1-Dichloroethane	1E-06	---	8E-08	---	1E-06	Kidney	--	---	8E-04	---	8.E-04
			1,1-Dichloroethene	---	---	---	---	---	Liver	2.E-02	---	2E-03	---	2.E-02
			1,2,4-Trichlorobenzene	9E-07	---	8E-07	---	2E-06	Kidney	3.E-02	---	3E-02	---	7.E-02
			1,2-Dichloroethane	3E-06	---	1E-07	---	3E-06	Neurologic effects	2.E-02	---	6E-04	---	2.E-02
			1,2-Dichloropropane	1E-07	---	7E-09	---	1E-07		---	3.E-04	---	2E-05	4.E-04
			1,4-Dioxane	5E-04	---	1E-06	---	5E-04	Liver; Kidney	2.E+00	---	5E-03	---	2.E+00
			Acetone	---	---	---	---	---	Kidney	1.E-02	---	---	---	1.E-02
			Benzene	9E-06	---	1E-06	---	1E-05	Blood	5.E-01	---	5E-02	---	5.E-01
			Bromodichloromethane	3E-07	---	2E-08	---	3E-07	Kidney	3.E-03	---	2E-04	---	3.E-03
			Chlorobenzene	---	---	---	---	---	Liver	4.E-03	---	1E-03	---	5.E-03
			Chloroform	2E-06	---	1E-07	---	2E-06	Liver	6.E-02	---	4E-03	---	6.E-02
			Cis-1,2-Dichloroethene	---	---	---	---	---	Kidney	4.E+00	---	2E-01	---	4.E+00
			Dibromochloromethane	2E-07	---	---	---	2E-07	Liver	1.E-03	---	---	---	1.E-03
			Ethylbenzene	3E-08	---	1E-08	---	4E-08	Liver and Kidney	3.E-04	---	1E-04	---	4.E-04
			Methyl Cyclohexane	---	---	---	---	---	---	--	---	---	---	---
			Methylene Chloride	1E-08	---	3E-10	---	1E-08	Liver	3.E-04	---	7E-06	---	3.E-04
			Tetrachloroethene	1E-06	---	5E-07	---	2E-06	Neurologic effects	1.E+00	---	5E-01	---	2.E+00
			Trichloroethene	5E-04	---	6E-05	---	6E-04		5.E+01	---	6E+00	---	5.E+01
			Vinyl Chloride	5E-05	---	2E-06	---	5E-05	Heart; Thymus; Blood	1.E-01	---	5E-03	---	1.E-01
			Chemical Total	1E-03	---	7E-05	---	1E-03		6.E+01	---	7.E+00	---	6.E+01
			Radionuclide Total				---	1E-03					6.E+01	
			Exposure Point Total				---	1E-03					6.E+01	
			Exposure Medium Total				---	1E-03					6.E+01	

Table 9.2.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient					
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total
Bedrock/Till Groundwater	Tap Water	Water Vapors from Showerhead	Bis(2-Ethylhexyl) Phthalate	---	4.E-16	---	---	4.E-16	---	---	---	---	---	---
			1,1,2-Trichloroethane	---	---	---	---	---	---	---	---	---	---	---
			1,1-Dichloroethane	---	5.E-13	---	---	5.E-13	---	---	---	---	---	---
			1,1-Dichloroethene	---	---	---	---	---	Liver	---	5.E-09	---	---	5.E-09
			1,2,4-Trichlorobenzene	---	---	---	---	---	Urinary Tract	---	2.E-07	---	---	2.E-07
			1,2-Dichloroethane	---	1.E-12	---	---	1.E-12	---	---	2.E-10	---	---	2.E-10
			1,2-Dichloropropane	---	3.E-14	---	---	3.E-14	Nasal	---	9.E-09	---	---	9.E-09
			1,4-Dioxane	---	8.E-12	---	---	8.E-12	---	---	3.E-09	---	---	3.E-09
			Acetone	---	---	---	---	---	---	---	3.E-10	---	---	3.E-10
			Benzene	---	1.E-12	---	---	1.E-12	Blood	---	7.E-08	---	---	7.E-08
			Bromodichloromethane	---	2.E-13	---	---	2.E-13	---	---	---	---	---	---
			Chlorobenzene	---	---	---	---	---	Liver; Kidney	---	2.E-09	---	---	2.E-09
			Chloroform	---	1.E-12	---	---	1.E-12	---	---	7.E-09	---	---	7.E-09
			Cis-1,2-Dichloroethene	---	---	---	---	---	---	---	---	---	---	---
			Dibromochloromethane	---	6.E-14	---	---	6.E-14	---	---	---	---	---	---
			Ethylbenzene	---	6.E-15	---	---	6.E-15	Development	---	3.E-11	---	---	3.E-11
			Methyl Cyclohexane	---	---	---	---	---	---	---	---	---	---	---
			Methylene Chloride	---	8.E-16	---	---	8.E-16	---	---	2.E-11	---	---	2.E-11
			Tetrachloroethene	---	2.E-13	---	---	2.E-13	Neurological	---	2.E-07	---	---	2.E-07
			Trichloroethene	---	5.E-11	---	---	5.E-11	Thymus; Heart	---	1.E-05	---	---	1.E-05
			Vinyl Chloride	---	4.E-13	---	---	4.E-13	Liver	---	5.E-09	---	---	5.E-09
			Chemical Total	---	6.E-11	---	---	6.E-11	---	---	1.E-05	---	---	1.E-05
			Exposure Point Total					6.E-11						1.E-05
			Exposure Medium Total					6.E-11						1.E-05
			Groundwater Total					1.E-03						6.E+01
			Receptor Total					1.E-03						6.E+01

Total Risk Across All Media = 1.E-03Total Hazard Across All Media = 6.E+01Total Liver HI Across All Media = 4.E+00Total Blood HI Across All Media = 5.E+01Total Skin HI Across All Media = 2.E-01Total CNS HI Across All Media = 2.E+00Total Kidney HI Across All Media = 8.E+00Total Pancreas HI Across All Media = 1.E-01Total Development HI Across All Media = 3.E-11Total Nasal HI Across All Media = 9.E-09Total Gastrointestinal HI Across All Media = 2.E-01Total Thyroid HI Across All Media = 5.E+01Total Urinary Tract HI Across All Media = 2.E-07Total Developmental HI Across All Media = 3.E-11Total Heart HI Across All Media = 5.E+01

Table 9.3.RME
SUMMARY OR RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Industrial/Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient					
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total
Bedrock/Till Groundwater	Tap Water	Tap Water	Aluminum	---	---	---	---	---	Neurologic effects	3.E-02	---	4.E-05	---	3.E-02
			Antimony	---	---	---	---	---	Blood, pancreas	4.E-02	---	3.E-04	---	4.E-02
			Arsenic	9E-06	---	1E-08	---	9E-06	Skin	6.E-02	---	8.E-05	---	6.E-02
			Cadmium	---	---	---	---	---	Kidney	1.E-02	---	4.E-04	---	1.E-02
			Chromium ⁺³	---	---	---	---	---	None Reported	5.E-04	---	5.E-05	---	5.E-04
			Chromium ⁺⁶	1E-05	---	5E-07	---	1E-05	None Reported	2.E-02	---	1.E-03	---	2.E-02
			Cobalt	---	---	---	---	---	Thyroid	2.E-01	---	3.E-04	---	2.E-01
			Iron	---	---	---	---	---	Gastrointestinal	7.E-02	---	1.E-04	---	7.E-02
			Manganese	---	---	---	---	---	CNS	5.E-02	---	2.E-03	---	5.E-02
			Mercury	---	---	---	---	---	CNS	9.E-03	---	1.E-05	---	9.E-03
			Vanadium	---	---	---	---	---	---	4.E-02	---	5.E-05	---	4.E-02
			Bis(2-Ethylhexyl) Phthalate	2E-07	---	1E-07	---	3E-07	Liver	2.E-03	---	1.E-03	---	3.E-03
			1,1,2-Trichloroethane	2E-07	---	5E-09	---	2E-07	Blood	---	---	6.E-05	---	6.E-05
			1,1-Dichloroethane	2E-06	---	4E-08	---	2E-06	Kidney	---	---	1.E-04	---	1.E-04
			1,1-Dichloroethylene	---	---	---	---	---	Liver	5.E-03	---	2.E-04	---	5.E-03
			1,2,4-Trichlorobenzene	1E-06	---	4E-07	---	2E-06	Kidney	1.E-02	---	4.E-03	---	1.E-02
			1,2-Dichloroethane	4E-06	---	5E-08	---	4E-06	Neurologic effects	6.E-03	---	8.E-05	---	6.E-03
			1,2-Dichloropropane	1E-07	---	4E-09	---	1E-07		---	1.E-04	---	3.E-06	1.E-04
			1,4-Dioxane	7E-04	---	7E-07	---	7E-04	Liver; Kidney	6.E-01	---	7.E-04	---	6.E-01
			Acetone	---	---	---	---	---	Kidney	4.E-03	---	---	---	4.E-03
			Benzene	1E-05	---	5E-07	---	1E-05	Blood	1.E-01	---	7.E-03	---	2.E-01
			Bromodichloromethane	4E-07	---	9E-09	---	4E-07	Kidney	9.E-04	---	2.E-05	---	9.E-04
			Chlorobenzene	---	---	---	---	---	Liver	1.E-03	---	1.E-04	---	1.E-03
			Chloroform	2E-06	---	5E-08	---	2E-06	Liver	2.E-02	---	5.E-04	---	2.E-02
			Cis-1,2-Dichloroethene	---	---	---	---	---	Kidney	1.E+00	---	3.E-02	---	1.E+00
			Dibromochloromethane	2E-07	---	---	---	2E-07	Liver	3.E-04	---	---	---	3.E-04
			Ethylbenzene	3E-08	---	6E-09	---	4E-08	Liver and Kidney	9.E-05	---	2.E-05	---	1.E-04
			Methyl Cyclohexane	---	---	---	---	---	---	---	---	---	---	---
			Methylene Chloride	1E-08	---	1E-10	---	1E-08	Liver	8.E-05	---	9.E-07	---	8.E-05
			Tetrachloroethene	2E-06	---	3E-07	---	2E-06	Neurologic effects	4.E-01	---	6.E-02	---	4.E-01
			Trichloroethene	1E-04	---	6E-06	---	1E-04		1.E+01	---	7.E-01	---	2.E+01
			Vinyl Chloride	3E-05	---	4E-07	---	3E-05	Heart; Thymus; Blood	4.E-02	---	6.E-04	---	4.E-02
			Chemical Total	9E-04	---	9E-06	---	9E-04	Liver	2.E+01	---	8.E-01	---	2.E+01
			Radionuclide Total				---	---						
			Exposure Point Total				9E-04							2.E+01
			Exposure Medium Total				9E-04							2.E+01
			Groundwater Total				9E-04							2.E+01
			Receptor Total				9E-04							2.E+01

Total Risk Across All Media = 9.E-04Total Hazard Across All Media = 2.E+01Total Liver HI Across All Media = 1.E+00Total Blood HI Across All Media = 2.E+01Total Skin HI Across All Media = 6.E-02Total CNS HI Across All Media = 5.E-01Total Kidney HI Across All Media = 2.E+00Total Pancreas HI Across All Media = 4.E-02Total Gastrointestinal HI Across All Media = 7.E-02Total Thyroid HI Across All Media = 2.E+01Total Heart HI Across All Media = 2.E+01

Table 9.3.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Industrial/Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient					
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total
Bedrock/Till Groundwater	Tap Water	Tap Water	Aluminum	---	---	---	---	---	Neurologic effects	1.E-02	---	4.E-05	---	1.E-02
			Antimony	---	---	---	---	---	Blood, pancreas	2.E-02	---	3.E-04	---	2.E-02
			Arsenic	1E-06	---	4E-09	---	1E-06	Skin	3.E-02	---	8.E-05	---	3.E-02
			Cadmium	---	---	---	---	---	Kidney	7.E-03	---	4.E-04	---	7.E-03
			Chromium ⁺³	---	---	---	---	---	None Reported	2.E-04	---	5.E-05	---	3.E-04
			Chromium ⁺⁶	1E-06	---	2E-07	---	2E-06	None Reported	9.E-03	---	1.E-03	---	1.E-02
			Cobalt	---	---	---	---	---	Thyroid	1.E-01	---	1.E-07	---	1.E-01
			Iron	---	---	---	---	---	Gastrointestinal	4.E-02	---	4.E-01	---	5.E-01
			Manganese	---	---	---	---	---	CNS	3.E-02	---	2.E-03	---	3.E-02
			Mercury	---	---	---	---	---	CNS	5.E-03	---	4.E-07	---	5.E-03
			Vanadium	---	---	---	---	---	---	2.E-02	---	5.E-05	---	2.E-02
			Bis(2-Ethylhexyl) Phthalate	3E-08	---	3E-08	---	6E-08	Liver	1.E-03	---	1.E-03	---	2.E-03
			1,1,2-Trichloroethane	2E-08	---	1E-09	---	3E-08	Blood	---	---	6.E-05	---	6.E-05
			1,1-Dichloroethane	3E-07	---	1E-08	---	3E-07	Kidney	---	---	1.E-04	---	1.E-04
			1,1-Dichloroethene	---	---	---	---	---	Liver	2.E-03	---	2.E-04	---	3.E-03
			1,2,4-Trichlorobenzene	2E-07	---	1E-07	---	3E-07	Kidney	5.E-03	---	4.E-03	---	9.E-03
			1,2-Dichloroethane	5E-07	---	1E-08	---	5E-07	Neurologic effects	3.E-03	---	8.E-05	---	3.E-03
			1,2-Dichloropropane	2E-08	---	1E-09	---	2E-08		5.E-05	---	3.E-06	---	6.E-05
			1,4-Dioxane	1E-04	---	2E-07	---	1E-04	Liver; Kidney	3.E-01	---	7.E-04	---	3.E-01
			Acetone	---	---	---	---	---	Kidney	2.E-03	---	---	---	2.E-03
			Benzene	2E-06	---	1E-07	---	2E-06	Blood	7.E-02	---	7.E-03	---	8.E-02
			Bromodichloromethane	5E-08	---	3E-09	---	6E-08	Kidney	4.E-04	---	2.E-05	---	4.E-04
			Chlorobenzene	---	---	---	---	---	Liver	6.E-04	---	1.E-04	---	7.E-04
			Chloroform	3E-07	---	2E-08	---	3E-07	Liver	9.E-03	---	5.E-04	---	1.E-02
			Cis-1,2-Dichloroethene	---	---	---	---	---	Kidney	6.E-01	---	3.E-02	---	6.E-01
			Dibromochloromethane	3E-08	---	---	---	3E-08	Liver	2.E-04	---	---	---	2.E-04
			Ethylbenzene	5E-09	---	2E-09	---	7E-09	Liver and Kidney	4.E-05	---	2.E-05	---	6.E-05
			Methyl Cyclohexane	---	---	---	---	---	---	---	---	---	---	---
			Methylene Chloride	2E-09	---	4E-11	---	2E-09	Liver	4.E-05	---	9.E-07	---	4.E-05
			Tetrachloroethene	2E-07	---	8E-08	---	3E-07	Neurologic effects	2.E-01	---	6.E-02	---	2.E-01
			Trichloroethene	2E-05	---	2E-06	---	2E-05		7.E+00	---	7.E-01	---	8.E+00
			Vinyl Chloride	4E-06	---	1E-07	---	4E-06	Heart; Thymus; Blood	2.E-02	---	6.E-04	---	2.E-02
			Chemical Total	1E-04	---	3E-06	---	1E-04	Liver	9.E+00	---	1.E+00	---	1.E+01
			Radionuclide Total				---							
			Exposure Point Total				1E-04							1.E+01
			Exposure Medium Total				1E-04							1.E+01
			Groundwater Total				1.E-04							1.E+01
			Receptor Total				1E-04							1.E+01

Total Risk Across All Media = 1.E-04Total Hazard Across All Media = 1.E+01Total Liver HI Across All Media = 7.E-01Total Blood HI Across All Media = 8.E+00Total Skin HI Across All Media = 3.E-02Total CNS HI Across All Media = 3.E-01Total Kidney HI Across All Media = 1.E+00Total Pancreas HI Across All Media = 2.E-02Total Gastrointestinal HI Across All Media = 5.E-01Total Thyroid HI Across All Media = 8.E+00Total Heart HI Across All Media = 8.E+00

Table 10.1.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient							
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total		
Bedrock/Till Groundwater	Tap Water	Tap Water	Arsenic	3E-05	---	7E-08	---	3E-05	Skin	2.E-01	---	4E-04	---	2.E-01		
			Chromium ⁺⁶	3E-05	---	3E-06	---	4E-05	None Reported	5.E-02	---	5E-03	---	6.E-02		
			Bis(2-Ethylhexyl) Phthalate	8E-07	2E-14	8E-07	---	2E-06	Liver	6.E-03	---	7E-03	---	1.E-02		
			1,1-Dichloroethane	6E-06	3E-11	3E-07	---	6E-06	Kidney	--	---	6E-04	---	6.E-04		
			1,2,4-Trichlorobenzene	4E-06	---	3E-06	---	7E-06	Kidney	3.E-02	2E-06	3E-02	---	6.E-02		
			1,2-Dichloroethane	1E-05	5E-11	4E-07	---	1E-05	Neurologic effects	2.E-02	2E-09	5E-04	---	2.E-02		
			1,4-Dioxane	2E-03	4E-10	5E-06	---	2E-03	Liver; Kidney	2.E+00	4E-08	4E-03	---	2.E+00		
			Benzene	4E-05	8E-11	4E-06	---	4E-05	Blood	4.E-01	8E-07	4E-02	---	4.E-01		
			Chloroform	7E-06	8E-11	4E-07	---	7E-06	Liver	5.E-02	8E-08	3E-03	---	5.E-02		
			Tetrachloroethene	5E-06	9E-12	2E-06	---	7E-06	Neurologic effects	1.E+00	2E-06	4E-01	---	1.E+00		
			Trichloroethene	4E-04	5E-10	5E-05	---	4E-04	Heart; Thymus; Blood	4.E+01	1E-04	5E+00	---	4.E+01		
			Vinyl Chloride	1E-04	1E-11	3E-06	---	1E-04	Liver	1.E-01	5E-08	4E-03	---	1.E-01		
			Chemical Total	3E-03	1E-09	7E-05	---	3E-03		4.E+01	5.E-06	5.E+00	---	5.E+01		
			Radionuclide Total				---									
			Exposure Point Total					3E-03						5.E+01		
Exposure Medium Total								3E-03						5.E+01		
Groundwater Total								3.E-03						5.E+01		
Receptor Total								3.E-03						5.E+01		

Total Risk Across All Media = 3.E-03Total Hazard Across All Media = 5.E+01Total Liver HI Across All Media = 3.E+00Total Blood HI Across All Media = 5.E+01Total Skin HI Across All Media = 2.E-01Total CNS HI Across All Media = 1.E+00Total Kidney HI Across All Media = 2.E+00

Table 10.1.CT
RISK SUMMARY
CENTRAL TENDENCY EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient							
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total		
Bedrock/Till Groundwater	Tap Water	Tap Water	Arsenic	5E-06	---	8E-09	---	5E-06	Skin	8.E-02	---	1E-04	---	8.E-02		
			Chromium ⁴⁶	5E-06	---	4E-07	---	5E-06	None Reported	3.E-02	---	2E-03	---	3.E-02		
			1,4-Dioxane	3E-04	9E-12	1E-06	---	3E-04	Liver; Kidney	9.E-01	3E-09	3E-03	---	9.E-01		
			Benzene	6E-06	2E-12	7E-07	---	6E-06	Blood	2.E-01	6E-08	3E-02	---	2.E-01		
			Cis-1,2-Dichloroethene	---	---	---	---	---	Kidney	2.E+00	---	1E-01	---	2.E+00		
			Tetrachloroethene	8E-07	2E-13	4E-07	---	1E-06	Neurologic effects	5.E-01	1E-07	2E-01	---	7.E-01		
			Trichloroethene	6E-05	1E-11	9E-06	---	7E-05	Heart; Thymus; Blood	2.E+01	1E-05	3E+00	---	2.E+01		
			Vinyl Chloride	1E-05	2E-13	6E-07	---	2E-05	Liver	5.E-02	4E-09	2E-03	---	6.E-02		
			Chemical Total	4E-04	2E-11	1E-05	---	4E-04		2.E+01	1.E-05	3.E+00	---	3.E+01		
			Radionuclide Total					---								
Exposure Point Total								4E-04						3.E+01		
Exposure Medium Total								4E-04						3.E+01		
Groundwater Total								4.E-04						3.E+01		
Receptor Total								4.E-04						3.E+01		

Total Risk Across All Media = 4.E-04Total Hazard Across All Media = 3.E+01

Total Liver HI Across All Media =	1.E+00
Total Blood HI Across All Media =	2.E+01
Total Skin HI Across All Media =	8.E-02
Total CNS HI Across All Media =	7.E-01
Total Kidney HI Across All Media =	3.E+00
Total Thyroid HI Across All Media =	2.E+01
Total Heart HI Across All Media =	2.E+01

Table 10.2.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient							
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total		
Bedrock/Till Groundwater	Tap Water	Tap Water	Arsenic	1E-05	---	4E-08	---	1E-05	Skin	4.E-01	---	1E-03	---	4.E-01		
			Chromium ⁺⁶	8E-05	---	1E-05	---	9E-05	None Reported	1.E-01	---	1E-02	---	1.E-01		
			Cobalt	---	---	---	---	---	Thyroid	1.E+00	---	4E-03	---	1.E+00		
			1,1-Dichloroethane	3E-06	2E-11	1E-07	---	3E-06	Kidney	--	---	1E-03	---	1.E-03		
			1,2,4-Trichlorobenzene	2E-06	---	1E-06	---	3E-06	Neurologic effects	7.E-02	6E-06	6E-02	---	1.E-01		
			1,2-Dichloroethane	6E-06	3E-11	2E-07	---	6E-06	Liver; Kidney	4.E-02	6E-09	1E-03	---	4.E-02		
			1,4-Dioxane	1E-03	3E-10	2E-06	---	1E-03	Blood	4.E+00	1E-07	1E-02	---	4.E+00		
			Benzene	2E-05	5E-11	2E-06	---	2E-05	Liver	1.E+00	2E-06	9E-02	---	1.E+00		
			Chloroform	3E-06	5E-11	2E-07	---	3E-06	Kidney	1.E-01	2E-07	7E-03	---	1.E-01		
			Cis-1,2-Dichloroethene	---	---	---	---	---	Neurologic effects	8.E+00	---	4E-01	---	8.E+00		
			Tetrachloroethene	2E-06	6E-12	1E-06	---	3E-06	Heart; Thymus; Blood	2.E+00	6E-06	9E-01	---	3.E+00		
			Trichloroethene	1E-03	2E-09	1E-04	---	1E-03	Liver	9.E+01	4E-04	1E+01	---	1.E+02		
			Vinyl Chloride	9E-05	1E-11	3E-06	---	9E-05		2.E-01	2E-07	8E-03	---	3.E-01		
			Chemical Total	2E-03	2E-09	1E-04	---	2E-03		1.E+02	1.E-05	1.E+01	---	1.E+02		
			Radionuclide Total					---			.					
			Exposure Point Total					2E-03						1.E+02		
			Exposure Medium Total					2E-03						1.E+02		
Groundwater Total								2.E-03						1.E+02		
Receptor Total								2.E-03						1.E+02		

Total Risk Across All Media = 2.E-03Total Hazard Across All Media = 1.E+02

Total Liver HI Across All Media =	5.E+00
Total Blood HI Across All Media =	1.E+02
Total Skin HI Across All Media =	4.E-01
Total CNS HI Across All Media =	3.E+00
Total Kidney HI Across All Media =	1.E+01
Total Thyroid HI Across All Media =	1.E+02
Total Heart HI Across All Media =	1.E+02

Table 10.2.CT
RISK SUMMARY
CENTRAL TENDENCY EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient							
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total		
Bedrock/Till Groundwater	Tap Water	Tap Water	Arsenic	7E-06	---	1E-08	---	7E-06	Skin	2.E-01	---	4E-04	---	2.E-01		
			Chromium ⁺⁶	4E-05	---	3E-06	---	4E-05	None Reported	6.E-02	---	4E-03	---	6.E-02		
			1,2-Dichloroethane	3E-06	1E-12	1E-07	---	3E-06	Neurologic effects	2.E-02	2E-10	6E-04	---	2.E-02		
			1,4-Dioxane	5E-04	8E-12	1E-06	---	5E-04	Liver; Kidney	2.E+00	3E-09	5E-03	---	2.E+00		
			Cis-1,2-Dichloroethene	---	---	---	---	---	Kidney	4.E+00	---	2E-01	---	4.E+00		
			Tetrachloroethene	1E-06	2E-13	5E-07	---	2E-06	Neurologic effects	1.E+00	2E-07	5E-01	---	2.E+00		
			Trichloroethene	5E-04	5E-11	6E-05	---	6E-04	Heart; Thymus; Blood	5.E+01	1E-05	6E+00	---	5.E+01		
			Vinyl Chloride	5E-05	4E-13	2E-06	---	5E-05	Liver	1.E-01	5E-09	5E-03	---	1.E-01		
			Chemical Total	1E-03	6E-11	7E-05	---	1E-03		5.E+01	2.E-07	7.E+00	---	6.E+01		
			Radionuclide Total					---								
Exposure Point Total								1E-03						6.E+01		
Exposure Medium Total								1E-03						6.E+01		
Groundwater Total								1.E-03						6.E+01		
Receptor Total								1.E-03						6.E+01		

Total Risk Across All Media = 1.E-03Total Hazard Across All Media = 6.E+01

Total Liver HI Across All Media =	2.E+00
Total Skin HI Across All Media =	2.E-01
Total CNS HI Across All Media =	2.E+00
Total Kidney HI Across All Media =	6.E+00
Total Thyroid HI Across All Media =	5.E+01
Total Heart HI Across All Media =	5.E+01

Table 10.3.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
 Receptor Population: Industrial/Commercial Worker
 Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient							
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total		
Bedrock/Till Groundwater	Tap Water	Tap Water	Arsenic	9E-06	---	1E-08	---	9E-06	Skin	6.E-02	---	8E-05	---	6.E-02		
			Chromium ⁺⁶	1E-05	---	5E-07	---	1E-05	None Reported	2.E-02	---	1E-03	---	2.E-02		
			1,1-Dichloroethane	2E-06	---	4E-08	---	2E-06	Kidney	---	---	1E-04	---	1.E-04		
			1,2-Dichloroethane	4E-06	---	5E-08	---	4E-06	Neurologic effects	6.E-03	---	8E-05	---	6.E-03		
			1,4-Dioxane	7E-04	---	7E-07	---	7E-04	Liver; Kidney	6.E-01	---	7E-04	---	6.E-01		
			Benzene	1E-05	---	5E-07	---	1E-05	Blood	1.E-01	---	7E-03	---	2.E-01		
			Chloroform	2E-06	---	5E-08	---	2E-06	Liver	2.E-02	---	5E-04	---	2.E-02		
			Tetrachloroethene	2E-06	---	3E-07	---	2E-06	Neurologic effects	4.E-01	---	6E-02	---	4.E-01		
			Trichloroethene	1E-04	---	6E-06	---	1E-04	Heart; Thymus; Blood	1.E+01	---	7E-01	---	2.E+01		
			Vinyl Chloride	3E-05	---	4E-07	---	3E-05	Liver	4.E-02	---	6E-04	---	4.E-02		
			Chemical Total	9E-04	---	9E-06	---	9E-04		2.E+01	---	8.E-01	---	2.E+01		
			Radionuclide Total					---								
Exposure Point Total								9E-04						2.E+01		
Exposure Medium Total								9E-04						2.E+01		
Groundwater Total								9.E-04						2.E+01		
Receptor Total								9.E-04						2.E+01		

Total Risk Across All Media = 9.E-04Total Hazard Across All Media = 2.E+01

Total Liver HI Across All Media = 7.E-01
 Total Blood HI Across All Media = 2.E+01
 Total Skin HI Across All Media = 6.E-02
 Total CNS HI Across All Media = 6.E-03
 Total Kidney HI Across All Media = 6.E-01
 Total Thyroid HI Across All Media = 2.E+01
 Total Heart HI Across All Media = 2.E+01

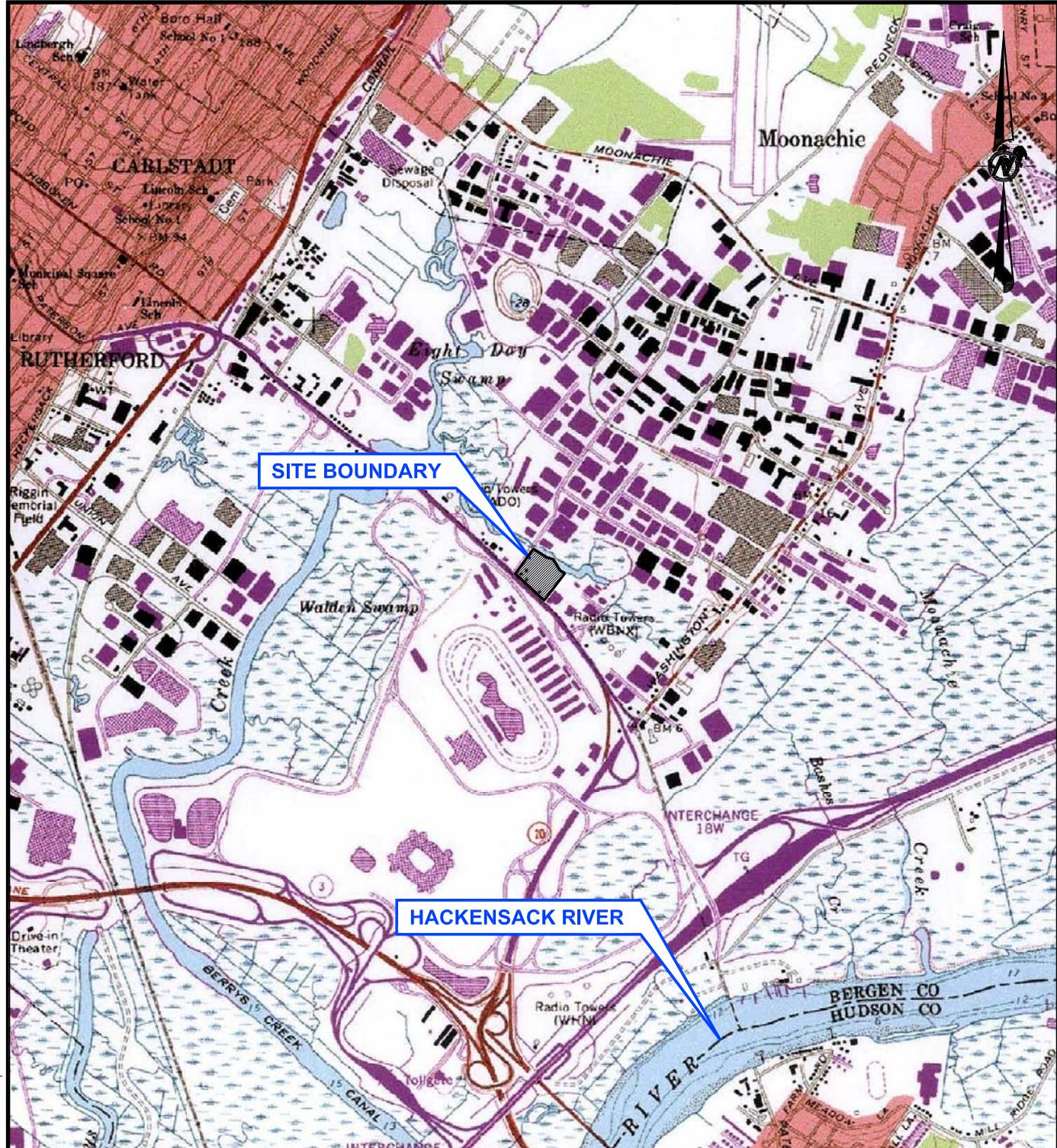
Table 10.3.CT
RISK SUMMARY
CENTRAL TENDENCY EXPOSURE
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Scenario Timeframe: Future
Receptor Population: Industrial/Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient							
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total		
Bedrock/Till Groundwater	Tap Water	Tap Water	Arsenic	1E-06	---	4E-09	---	1E-06	Skin	3.E-02	---	8E-05	---	3.E-02		
			Chromium ⁺⁶	1E-06	---	2E-07	---	2E-06	None Reported	9.E-03	---	1E-03	---	1.E-02		
			1,4-Dioxane	1E-04	---	2E-07	---	1E-04	Liver; Kidney	3.E-01	---	7E-04	---	3.E-01		
			Tetrachloroethene	2E-07	---	8E-08	---	3E-07	Neurologic effects	2.E-01	---	6E-02	---	2.E-01		
			Trichloroethene	2E-05	---	2E-06	---	2E-05	Heart; Thymus; Blood	7.E+00	---	7E-01	---	8.E+00		
			Vinyl Chloride	4E-06	---	1E-07	---	4E-06	Liver	2.E-02	---	6E-04	---	2.E-02		
			Chemical Total	1E-04	---	2E-06	---	1E-04		8.E+00	---	8.E-01	---	9.E+00		
			Radionuclide Total					---								
Exposure Point Total								1E-04						9.E+00		
Exposure Medium Total								1E-04						9.E+00		
Groundwater Total								1E-04						9.E+00		
Receptor Total								1E-04						9.E+00		

Total Risk Across All Media = 1.E-04

Total Liver HI Across All Media =	3.E-01
Total Blood HI Across All Media =	8.E+00
Total Skin HI Across All Media =	1.E-02
Total CNS HI Across All Media =	2.E-01
Total Thyroid HI Across All Media =	8.E+00
Total Heart HI Across All Media =	8.E+00



Jul 13, 2012 - 3:20pm

Drawing file: 9436222ZE01.dwg

REFERENCE

- 1.) BASE MAP TAKEN FROM U.S.G.S. 7.5 MINUTE QUADRANGLE OF WEEHAWKEN, NEW JERSEY, DATED 1967 AND PHOTOREVISED 1981.

2000 0 2000
APPROPRIATE SCALE FEET



NJ Authorization #24GA28029100

SCALE	AS SHOWN	TITLE
DATE	05/06/11	
DESIGN	HAL	
CADD	AM	

FILE No. 9436222ZE01
PROJECT No. 943-6222 REV. 0

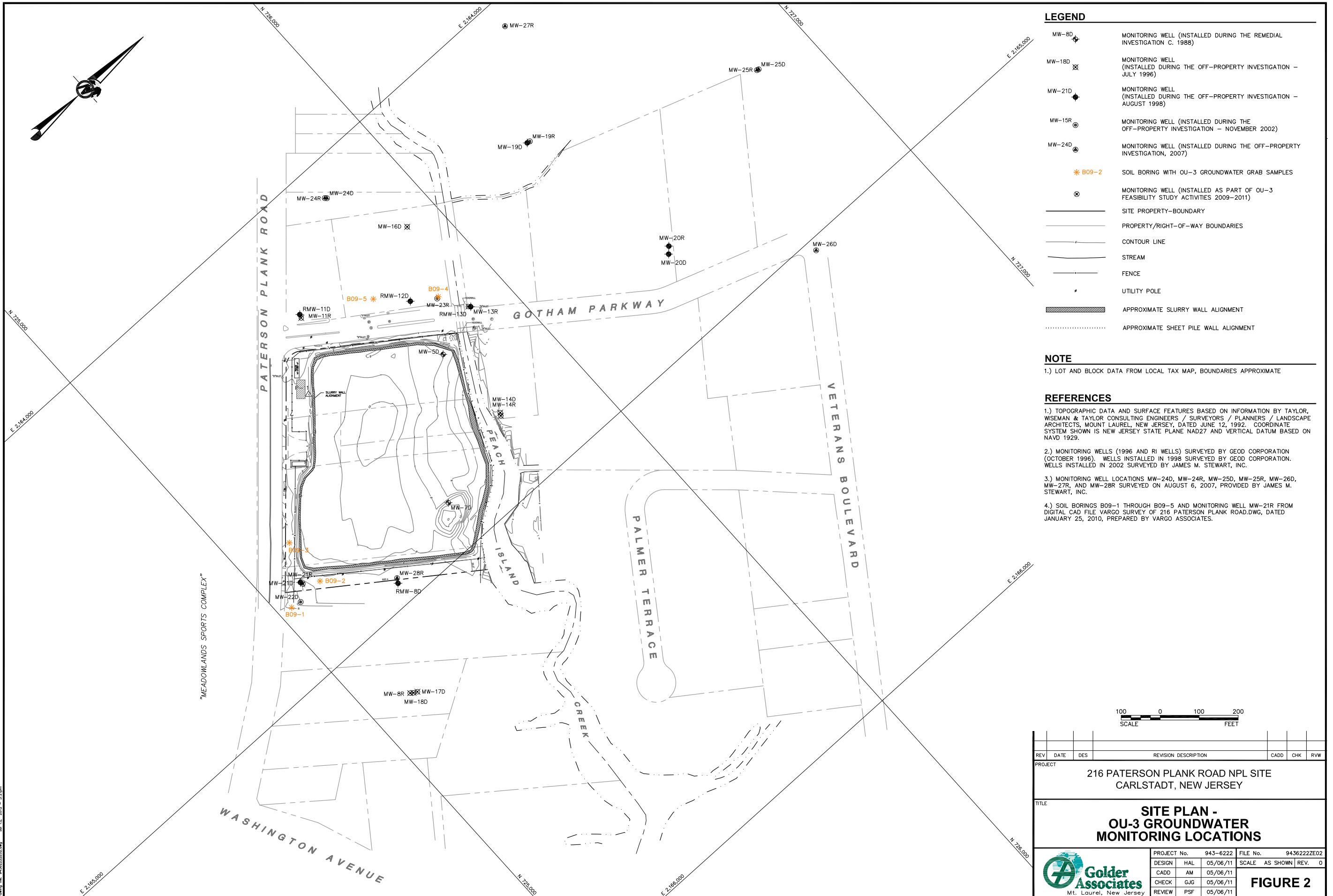
CHECK GJG
REVIEW PSF

SITE LOCATION MAP

FIGURE

1

R2-0002570



APPENDIX A
CALCULATIONS FOR DA_{event}

Table A-1.RME
 Calculation of DA_{event} for Dermal Exposure Route - Adult Resident
 Reasonable Maximum Exposure
 Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

	EPC (mg/cm ³)	FA	K _p (cm/hr) ^a	B (dimensionless) ^a	t _{event} (hr/event) ^a	t [*] ^a	t _{event>t*} ^b	DA _{event} ^c
Aluminum	3.0E-03		1.0E-03					7.5E-07
Antimony	1.5E-06		1.0E-03					3.8E-10
Arsenic	1.8E-06		1.0E-03					4.5E-10
Cadmium	7.1E-07		1.0E-03					1.8E-10
Chromium ⁺³	7.1E-05		1.0E-03					1.8E-08
Chromium ⁺⁶	5.5E-06		1.0E-03					1.4E-09
Cobalt	6.4E-06		1.0E-03					1.6E-09
Iron	5.0E-03		1.0E-03					1.3E-06
Lead	2.1E-05		1.0E-03					5.2E-09
Manganese	1.3E-04		1.0E-03					3.2E-08
Mercury	1.5E-07		1.0E-03					3.8E-11
Vanadium	1.8E-05		1.0E-03					4.5E-09
Bis(2-Ethylhexyl) Phthalate	4.7E-06	0.8	2.5E-02	2.0E-01	1.7E+01	4.0E+01	No	5.3E-07
1,1,2-Trichloroethane	8.3E-07	1.0	6.4E-03	0.0E+00	6.0E-01	1.4E+00	No	5.7E-09
1,1-Dichloroethane	9.1E-05	1.0	6.7E-03	0.0E+00	3.8E-01	9.2E-01	No	5.2E-07
1,1-Dichloroethene	2.4E-05	1.0	1.2E-02	0.0E+00	3.7E-01	8.9E-01	No	2.5E-07
1,2,4-Trichlorobenzene	1.1E-05	1.0	6.6E-02	3.0E-01	1.1E+00	2.7E+00	No	1.0E-06
1,2-Dichloroethane	1.1E-05	1.0	4.2E-03	0.0E+00	3.8E-01	9.2E-01	No	4.0E-08
1,2-Dichloropropane	9.7E-07	1.0	7.8E-03	0.0E+00	4.6E-01	1.1E+00	No	7.1E-09
1,4-Dioxane	2.0E-03	1.0	3.3E-04	0.0E+00	3.3E-01	8.0E-01	No	5.1E-07
Acetone	3.6E-04	--	--	--	--	--	--	--
Benzene	6.0E-05	1.0	1.5E-02	1.0E-01	2.9E-01	7.0E-01	No	6.6E-07
Bromodichloromethane	1.7E-06	1.0	4.6E-03	0.0E+00	8.8E-01	2.1E+00	No	1.0E-08
Chlorobenzene	2.3E-06	1.0	2.8E-02	1.0E-01	4.6E-01	1.1E+00	No	6.1E-08
Chloroform	1.8E-05	1.0	6.8E-03	0.0E+00	5.0E-01	1.2E+00	No	1.2E-07
Cis-1,2-Dichloroethene	2.3E-04	1.0	7.7E-03	0.0E+00	3.7E-01	8.9E-01	No	1.5E-06
Dibromochloromethane	6.8E-07	--	--	--	--	--	--	--
Ethylbenzene	8.8E-07	1.0	4.9E-02	2.0E-01	4.2E-01	1.0E+00	No	3.9E-08
Methyl Cyclohexane	2.8E-07	--	--	--	--	--	--	--
Methylene Chloride	4.9E-07	1.0	3.5E-03	0.0E+00	3.2E-01	7.6E-01	No	1.3E-09
Tetrachloroethene	2.2E-04	1.0	3.3E-02	2.0E-01	9.1E-01	2.2E+00	No	9.4E-06
Trichloroethene	7.4E-04	1.0	1.2E-02	1.0E-01	5.8E-01	1.4E+00	No	9.3E-06
Vinyl Chloride	1.2E-05	1.0	5.6E-03	0.0E+00	2.4E-01	5.7E-01	No	4.4E-08

a - Value taken from Exhibit B-3 of RAGS Part E

b - t_{event} = 0.25 hr/event (15 minutes) per USEPA Region IIc - Equation for DA_{event} calculation provided in Table 3-2

Table A-1.CT
 Calculation of DA_{event} for Dermal Exposure Route - Adult Resident
 Central Tendency Exposure
 Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

	EPC (mg/cm ³)	FA	K _p (cm/hr) ^a	B (dimensionless) ^a	t _{event} (hr/event) ^a	t [*] ^a	t _{event>t*} ^b	DA _{event} ^c
Aluminum	3.0E-03		1.0E-03					3.0E-07
Antimony	1.5E-06		1.0E-03					1.5E-10
Arsenic	1.8E-06		1.0E-03					1.8E-10
Cadmium	7.1E-07		1.0E-03					7.1E-11
Chromium ⁺³	7.1E-05		1.0E-03					7.1E-09
Chromium ⁺⁶	5.5E-06		1.0E-03					5.5E-10
Cobalt	6.4E-06		1.0E-03					6.4E-10
Iron	5.0E-03		1.0E-03					5.0E-07
Lead	2.1E-05		1.0E-03					2.1E-09
Manganese	1.3E-04		1.0E-03					1.3E-08
Mercury	1.5E-07		1.0E-03					1.5E-11
Vanadium	1.8E-05		1.0E-03					1.8E-09
Bis(2-Ethylhexyl) Phthalate	4.7E-06	0.8	2.5E-02	2.0E-01	1.7E+01	4.0E+01	No	3.4E-07
1,1,2-Trichloroethane	8.3E-07	1.0	6.4E-03	0.0E+00	6.0E-01	1.4E+00	No	3.6E-09
1,1-Dichloroethane	9.1E-05	1.0	6.7E-03	0.0E+00	3.8E-01	9.2E-01	No	3.3E-07
1,1-Dichloroethene	2.4E-05	1.0	1.2E-02	0.0E+00	3.7E-01	8.9E-01	No	1.6E-07
1,2,4-Trichlorobenzene	1.1E-05	1.0	6.6E-02	3.0E-01	1.1E+00	2.7E+00	No	6.6E-07
1,2-Dichloroethane	1.1E-05	1.0	4.2E-03	0.0E+00	3.8E-01	9.2E-01	No	2.5E-08
1,2-Dichloropropane	9.7E-07	1.0	7.8E-03	0.0E+00	4.6E-01	1.1E+00	No	4.5E-09
1,4-Dioxane	2.0E-03	1.0	3.3E-04	0.0E+00	3.3E-01	8.0E-01	No	3.2E-07
Acetone	3.6E-04	--	--	--	--	--	--	--
Benzene	6.0E-05	1.0	1.5E-02	1.0E-01	2.9E-01	7.0E-01	No	4.2E-07
Bromodichloromethane	1.7E-06	1.0	4.6E-03	0.0E+00	8.8E-01	2.1E+00	No	6.6E-09
Chlorobenzene	2.3E-06	1.0	2.8E-02	1.0E-01	4.6E-01	1.1E+00	No	3.9E-08
Chloroform	1.8E-05	1.0	6.8E-03	0.0E+00	5.0E-01	1.2E+00	No	7.8E-08
Cis-1,2-Dichloroethene	2.3E-04	1.0	7.7E-03	0.0E+00	3.7E-01	8.9E-01	No	9.6E-07
Dibromochloromethane	6.8E-07	--	--	--	--	--	--	--
Ethylbenzene	8.8E-07	1.0	4.9E-02	2.0E-01	4.2E-01	1.0E+00	No	2.4E-08
Methyl Cyclohexane	2.8E-07	--	--	--	--	--	--	--
Methylene Chloride	4.9E-07	1.0	3.5E-03	0.0E+00	3.2E-01	7.6E-01	No	8.5E-10
Tetrachloroethene	2.2E-04	1.0	3.3E-02	2.0E-01	9.1E-01	2.2E+00	No	5.9E-06
Trichloroethene	7.4E-04	1.0	1.2E-02	1.0E-01	5.8E-01	1.4E+00	No	5.9E-06
Vinyl Chloride	1.2E-05	1.0	5.6E-03	0.0E+00	2.4E-01	5.7E-01	No	2.8E-08

a - Value taken from Exhibit B-3 of RAGS Part E

b - t_{event} = 0.25 hr/event (15 minutes) per USEPA Region IIc - Equation for DA_{event} calculation provided in Table 3-2

Table A-2.RME
 Calculation of DA_{event} for Dermal Exposure Route - Child Resident
 Reasonable Maximum Exposure
 Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

	EPC (mg/cm ³)	FA	K _p (cm/hr) ^a	B (dimensionless) ^a	t _{event} (hr/event) ^a	t [*] ^a	t _{event>t*} ^b	DA _{event} ^c
Aluminum	3.0E-03		1.0E-03					1.3E-06
Antimony	1.5E-06		1.0E-03					6.8E-10
Arsenic	1.8E-06		1.0E-03					8.0E-10
Cadmium	7.1E-07		1.0E-03					3.2E-10
Chromium ⁺³	7.1E-05		1.0E-03					3.2E-08
Chromium ⁺⁶	5.5E-06		1.0E-03					2.5E-09
Cobalt	6.4E-06		1.0E-03					2.9E-09
Iron	5.0E-03		1.0E-03					2.3E-06
Lead	2.1E-05		1.0E-03					9.4E-09
Manganese	1.3E-04		1.0E-03					5.8E-08
Mercury	1.5E-07		1.0E-03					6.8E-11
Vanadium	1.8E-05		1.0E-03					8.1E-09
Bis(2-Ethylhexyl) Phthalate	4.7E-06	0.8	2.5E-02	2.0E-01	1.7E+01	4.0E+01	No	7.1E-07
1,1,2-Trichloroethane	8.3E-07	1.0	6.4E-03	0.0E+00	6.0E-01	1.4E+00	No	7.6E-09
1,1-Dichloroethane	9.1E-05	1.0	6.7E-03	0.0E+00	3.8E-01	9.2E-01	No	6.9E-07
1,1-Dichloroethene	2.4E-05	1.0	1.2E-02	0.0E+00	3.7E-01	8.9E-01	No	3.3E-07
1,2,4-Trichlorobenzene	1.1E-05	1.0	6.6E-02	3.0E-01	1.1E+00	2.7E+00	No	1.4E-06
1,2-Dichloroethane	1.1E-05	1.0	4.2E-03	0.0E+00	3.8E-01	9.2E-01	No	5.4E-08
1,2-Dichloropropane	9.7E-07	1.0	7.8E-03	0.0E+00	4.6E-01	1.1E+00	No	9.6E-09
1,4-Dioxane	2.0E-03	1.0	3.3E-04	0.0E+00	3.3E-01	8.0E-01	No	6.9E-07
Acetone	3.6E-04	--	--	--	--	--	--	--
Benzene	6.0E-05	1.0	1.5E-02	1.0E-01	2.9E-01	7.0E-01	No	8.9E-07
Bromodichloromethane	1.7E-06	1.0	4.6E-03	0.0E+00	8.8E-01	2.1E+00	No	1.4E-08
Chlorobenzene	2.3E-06	1.0	2.8E-02	1.0E-01	4.6E-01	1.1E+00	No	8.2E-08
Chloroform	1.8E-05	1.0	6.8E-03	0.0E+00	5.0E-01	1.2E+00	No	1.6E-07
Cis-1,2-Dichloroethene	2.3E-04	1.0	7.7E-03	0.0E+00	3.7E-01	8.9E-01	No	2.0E-06
Dibromochloromethane	6.8E-07	--	--	--	--	--	--	--
Ethylbenzene	8.8E-07	1.0	4.9E-02	2.0E-01	4.2E-01	1.0E+00	No	5.2E-08
Methyl Cyclohexane	2.8E-07	--	--	--	--	--	--	--
Methylene Chloride	4.9E-07	1.0	3.5E-03	0.0E+00	3.2E-01	7.6E-01	No	1.8E-09
Tetrachloroethene	2.2E-04	1.0	3.3E-02	2.0E-01	9.1E-01	2.2E+00	No	1.3E-05
Trichloroethene	7.4E-04	1.0	1.2E-02	1.0E-01	5.8E-01	1.4E+00	No	1.2E-05
Vinyl Chloride	1.2E-05	1.0	5.6E-03	0.0E+00	2.4E-01	5.7E-01	No	5.9E-08

a - Value taken from Exhibit B-3 of RAGS Part E

b - t_{event} = 0.25 hr/event (15 minutes) per USEPA Region II

c - Equation for DA_{event} calculation provided in Table 3-2

Table A-2.CT
 Calculation of DA_{event} for Dermal Exposure Route - Child Resident
 Central Tendency Exposure
 Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

	EPC (mg/cm ³)	FA	K _p (cm/hr) ^a	B (dimensionless) ^a	t _{event} (hr/event) ^a	t [*] ^a	t _{event>t*} ^b	DA _{event} ^c
Aluminum	3.0E-03		1.0E-03					4.2E-07
Antimony	1.5E-06		1.0E-03					2.1E-10
Arsenic	1.8E-06		1.0E-03					2.5E-10
Cadmium	7.1E-07		1.0E-03					9.9E-11
Chromium ⁺³	7.1E-05		1.0E-03					1.0E-08
Chromium ⁺⁶	5.5E-06		1.0E-03					7.7E-10
Cobalt	6.4E-06		1.0E-03					8.9E-10
Iron	5.0E-03		1.0E-03					7.0E-07
Lead	2.1E-05		1.0E-03					2.9E-09
Manganese	1.3E-04		1.0E-03					1.8E-08
Mercury	1.5E-07		1.0E-03					2.1E-11
Vanadium	1.8E-05		1.0E-03					2.5E-09
Bis(2-Ethylhexyl) Phthalate	4.7E-06	0.8	2.5E-02	2.0E-01	1.7E+01	4.0E+01	No	4.0E-07
1,1,2-Trichloroethane	8.3E-07	1.0	6.4E-03	0.0E+00	6.0E-01	1.4E+00	No	4.2E-09
1,1-Dichloroethane	9.1E-05	1.0	6.7E-03	0.0E+00	3.8E-01	9.2E-01	No	3.9E-07
1,1-Dichloroethene	2.4E-05	1.0	1.2E-02	0.0E+00	3.7E-01	8.9E-01	No	1.8E-07
1,2,4-Trichlorobenzene	1.1E-05	1.0	6.6E-02	3.0E-01	1.1E+00	2.7E+00	No	7.8E-07
1,2-Dichloroethane	1.1E-05	1.0	4.2E-03	0.0E+00	3.8E-01	9.2E-01	No	3.0E-08
1,2-Dichloropropane	9.7E-07	1.0	7.8E-03	0.0E+00	4.6E-01	1.1E+00	No	5.3E-09
1,4-Dioxane	2.0E-03	1.0	3.3E-04	0.0E+00	3.3E-01	8.0E-01	No	3.8E-07
Acetone	3.6E-04	--	--	--	--	--	--	--
Benzene	6.0E-05	1.0	1.5E-02	1.0E-01	2.9E-01	7.0E-01	No	5.0E-07
Bromodichloromethane	1.7E-06	1.0	4.6E-03	0.0E+00	8.8E-01	2.1E+00	No	7.8E-09
Chlorobenzene	2.3E-06	1.0	2.8E-02	1.0E-01	4.6E-01	1.1E+00	No	4.6E-08
Chloroform	1.8E-05	1.0	6.8E-03	0.0E+00	5.0E-01	1.2E+00	No	9.2E-08
Cis-1,2-Dichloroethene	2.3E-04	1.0	7.7E-03	0.0E+00	3.7E-01	8.9E-01	No	1.1E-06
Dibromochloromethane	6.8E-07	--	--	--	--	--	--	--
Ethylbenzene	8.8E-07	1.0	4.9E-02	2.0E-01	4.2E-01	1.0E+00	No	2.9E-08
Methyl Cyclohexane	2.8E-07	--	--	--	--	--	--	--
Methylene Chloride	4.9E-07	1.0	3.5E-03	0.0E+00	3.2E-01	7.6E-01	No	1.0E-09
Tetrachloroethene	2.2E-04	1.0	3.3E-02	2.0E-01	9.1E-01	2.2E+00	No	7.0E-06
Trichloroethene	7.4E-04	1.0	1.2E-02	1.0E-01	5.8E-01	1.4E+00	No	6.9E-06
Vinyl Chloride	1.2E-05	1.0	5.6E-03	0.0E+00	2.4E-01	5.7E-01	No	3.3E-08

a - Value taken from Exhibit B-3 of RAGS Part E

b - t_{event} = 0.25 hr/event (15 minutes) per USEPA Region IIc - Equation for DA_{event} calculation provided in Table 3-2

Table A-3.RME
 Calculation of DA_{event} for Dermal Exposure Route - Adult Industrial/Commercial Worker
 Reasonable Maximum Exposure
 Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

	EPC (mg/cm ³)	FA	K _p (cm/hr) ^a	B (dimensionless) ^a	t _{event} (hr/event) ^a	t [*] ^a	t _{event>t*} ^b	DA _{event} ^c
Aluminum	3.0E-03		1.0E-03					1.5E-06
Antimony	1.5E-06		1.0E-03					7.5E-10
Arsenic	1.8E-06		1.0E-03					8.9E-10
Cadmium	7.1E-07		1.0E-03					3.5E-10
Chromium ⁺³	7.1E-05		1.0E-03					3.6E-08
Chromium ⁺⁶	5.5E-06		1.0E-03					2.8E-09
Cobalt	6.4E-06		1.0E-03					3.2E-09
Iron	5.0E-03		1.0E-03					2.5E-06
Lead	2.1E-05		1.0E-03					1.0E-08
Manganese	1.3E-04		1.0E-03					6.5E-08
Mercury	1.5E-07		1.0E-03					7.5E-11
Vanadium	1.8E-05		1.0E-03					9.0E-09
Bis(2-Ethylhexyl) Phthalate	4.7E-06	0.8	2.5E-02	2.0E-01	1.7E+01	4.0E+01	No	7.5E-07
1,1,2-Trichloroethane	8.3E-07	1.0	6.4E-03	0.0E+00	6.0E-01	1.4E+00	No	8.0E-09
1,1-Dichloroethane	9.1E-05	1.0	6.7E-03	0.0E+00	3.8E-01	9.2E-01	No	7.3E-07
1,1-Dichloroethene	2.4E-05	1.0	1.2E-02	0.0E+00	3.7E-01	8.9E-01	No	3.5E-07
1,2,4-Trichlorobenzene	1.1E-05	1.0	6.6E-02	3.0E-01	1.1E+00	2.7E+00	No	1.5E-06
1,2-Dichloroethane	1.1E-05	1.0	4.2E-03	0.0E+00	3.8E-01	9.2E-01	No	5.7E-08
1,2-Dichloropropane	9.7E-07	1.0	7.8E-03	0.0E+00	4.6E-01	1.1E+00	No	1.0E-08
1,4-Dioxane	2.0E-03	1.0	3.3E-04	0.0E+00	3.3E-01	8.0E-01	No	7.3E-07
Acetone	3.6E-04	--	--	--	--	--	--	--
Benzene	6.0E-05	1.0	1.5E-02	1.0E-01	2.9E-01	7.0E-01	No	9.4E-07
Bromodichloromethane	1.7E-06	1.0	4.6E-03	0.0E+00	8.8E-01	2.1E+00	No	1.5E-08
Chlorobenzene	2.3E-06	1.0	2.8E-02	1.0E-01	4.6E-01	1.1E+00	No	8.7E-08
Chloroform	1.8E-05	1.0	6.8E-03	0.0E+00	5.0E-01	1.2E+00	No	1.7E-07
Cis-1,2-Dichloroethene	2.3E-04	1.0	7.7E-03	0.0E+00	3.7E-01	8.9E-01	No	2.2E-06
Dibromochloromethane	6.8E-07	--	--	--	--	--	--	--
Ethylbenzene	8.8E-07	1.0	4.9E-02	2.0E-01	4.2E-01	1.0E+00	No	5.4E-08
Methyl Cyclohexane	2.8E-07	--	--	--	--	--	--	--
Methylene Chloride	4.9E-07	1.0	3.5E-03	0.0E+00	3.2E-01	7.6E-01	No	1.9E-09
Tetrachloroethene	2.2E-04	1.0	3.3E-02	2.0E-01	9.1E-01	2.2E+00	No	1.3E-05
Trichloroethene	7.4E-04	1.0	1.2E-02	1.0E-01	5.8E-01	1.4E+00	No	1.3E-05
Vinyl Chloride	1.2E-05	1.0	5.6E-03	0.0E+00	2.4E-01	5.7E-01	No	6.2E-08

a - Value taken from Exhibit B-3 of RAGS Part E

b - t_{event} = 0.25 hr/event (15 minutes) per USEPA Region II

c - Equation for DA_{event} calculation provided in Table 3-2

Table A-3.CT
 Calculation of DA_{event} for Dermal Exposure Route - Adult Industrial/Commercial Worker
 Central Tendency Exposure
 Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

	EPC (mg/cm ³)	FA	K _p (cm/hr) ^a	B (dimensionless) ^a	t _{event} (hr/event) ^a	t [*] ^a	t _{event>t*} ^b	DA _{event} ^c
Aluminum	3.0E-03		1.0E-03					1.5E-06
Antimony	1.5E-06		1.0E-03					7.5E-10
Arsenic	1.8E-06		1.0E-03					8.9E-10
Cadmium	7.1E-07		1.0E-03					3.5E-10
Chromium ⁺³	7.1E-05		1.0E-03					3.6E-08
Chromium ⁺⁶	5.5E-06		1.0E-03					2.8E-09
Cobalt	6.4E-06		1.0E-03					3.2E-09
Iron	5.0E-03		1.0E-03					2.5E-06
Lead	2.1E-05		1.0E-03					1.0E-08
Manganese	1.3E-04		1.0E-03					6.5E-08
Mercury	1.5E-07		1.0E-03					7.5E-11
Vanadium	1.8E-05		1.0E-03					9.0E-09
Bis(2-Ethylhexyl) Phthalate	4.7E-06	0.8	2.5E-02	2.0E-01	1.7E+01	4.0E+01	No	7.5E-07
1,1,2-Trichloroethane	8.3E-07	1.0	6.4E-03	0.0E+00	6.0E-01	1.4E+00	No	8.0E-09
1,1-Dichloroethane	9.1E-05	1.0	6.7E-03	0.0E+00	3.8E-01	9.2E-01	No	7.3E-07
1,1-Dichloroethene	2.4E-05	1.0	1.2E-02	0.0E+00	3.7E-01	8.9E-01	No	3.5E-07
1,2,4-Trichlorobenzene	1.1E-05	1.0	6.6E-02	3.0E-01	1.1E+00	2.7E+00	No	1.5E-06
1,2-Dichloroethane	1.1E-05	1.0	4.2E-03	0.0E+00	3.8E-01	9.2E-01	No	5.7E-08
1,2-Dichloropropane	9.7E-07	1.0	7.8E-03	0.0E+00	4.6E-01	1.1E+00	No	1.0E-08
1,4-Dioxane	2.0E-03	1.0	3.3E-04	0.0E+00	3.3E-01	8.0E-01	No	7.3E-07
Acetone	3.6E-04	--	--	--	--	--	--	--
Benzene	6.0E-05	1.0	1.5E-02	1.0E-01	2.9E-01	7.0E-01	No	9.4E-07
Bromodichloromethane	1.7E-06	1.0	4.6E-03	0.0E+00	8.8E-01	2.1E+00	No	1.5E-08
Chlorobenzene	2.3E-06	1.0	2.8E-02	1.0E-01	4.6E-01	1.1E+00	No	8.7E-08
Chloroform	1.8E-05	1.0	6.8E-03	0.0E+00	5.0E-01	1.2E+00	No	1.7E-07
Cis-1,2-Dichloroethene	2.3E-04	1.0	7.7E-03	0.0E+00	3.7E-01	8.9E-01	No	2.2E-06
Dibromochloromethane	6.8E-07	--	--	--	--	--	--	--
Ethylbenzene	8.8E-07	1.0	4.9E-02	2.0E-01	4.2E-01	1.0E+00	No	5.4E-08
Methyl Cyclohexane	2.8E-07	--	--	--	--	--	--	--
Methylene Chloride	4.9E-07	1.0	3.5E-03	0.0E+00	3.2E-01	7.6E-01	No	1.9E-09
Tetrachloroethene	2.2E-04	1.0	3.3E-02	2.0E-01	9.1E-01	2.2E+00	No	1.3E-05
Trichloroethene	7.4E-04	1.0	1.2E-02	1.0E-01	5.8E-01	1.4E+00	No	1.3E-05
Vinyl Chloride	1.2E-05	1.0	5.6E-03	0.0E+00	2.4E-01	5.7E-01	No	6.2E-08

a - Value taken from Exhibit B-3 of RAGS Part E

b - t_{event} = 0.25 hr/event (15 minutes) per USEPA Region IIc - Equation for DA_{event} calculation provided in Table 3-2

APPENDIX B
CALCULATIONS FOR SHOWER MODEL

Table B-1
Exposure Time for Shower Model
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Exposure Time for dermal contact is based on the time spent while showering and
 Exposure Time for inhalation is based on time spent in the bathroom during and after the shower

Adult Resident

	RME	CT
Showering Time	0.25	0.10
Time Spent in Bathroom After Showering (hours)	0.33	0.15
Total Time (hours)	0.58	0.25

Child Resident

	RME	CT
Showering Time	0.45	0.14
Time Spent in Bathroom After Showering (hours)	0.55	0.19
Total Time (hours)	1.00	0.33

References:

Andelman model as modified by Schaum et al.

TABLE B-2
Calculation of the Volatilization Fraction for Shower Model
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

$$f_i = f_j \frac{\left(\frac{2.5}{D_w^{0.67}} + \frac{RT}{D_a^{0.67} H} \right)_j}{\left(\frac{2.5}{D_w^{0.67}} + \frac{RT}{D_a^{0.67} H} \right)_i}$$

Equation from Schaum et al., 1994

Where:

f_j volatilization fraction for chemical j
 f_i volatilization fraction for chemical i
 D_a diffusion coefficient in air, m^2/s
 D_w diffusion coefficient in water, m^2/s
 R gas constant, atm $\text{m}^3/\text{mol K} = 8.21\text{e-5}$
 H Henry's Law constant, atm $\text{m}^3/\text{mol K}$
 T Temperature, K

Known values	
Radon	
6.5E-01	f_j
2.0E-05	D_a
1.4E-09	D_w
9.2E-02	H
313	K

	Compound	Da	Dw	H	fi	Source
		m^2/s	atm m^3/mol			
	1,1,2-Trichloroethane	7.8E-06	8.8E-10	9.1E-04	0.46	1
	1,2,4-Trichlorobenzene	3.0E-06	8.2E-10	1.4E-03	0.44	1
	1,1-Dichloroethane	8.4E-06	1.1E-09	5.6E-03	0.54	1
	1,1-Dichloroethene	8.6E-06	1.1E-09	2.6E-02	0.55	1
	1,2-Dichloroethane	8.6E-06	1.1E-09	1.2E-03	0.54	1
	1,2-Dichloropropane	8.1E-06	9.5E-10	2.8E-03	0.50	1
	1,4-Dioxane	8.7E-06	1.1E-09	4.8E-06	0.09	1
	Acetone	1.1E-05	1.2E-09	3.5E-05	0.35	1
	Benzene	9.0E-06	1.0E-09	5.6E-03	0.52	1
	Bromodichloromethane	5.6E-06	1.1E-09	2.1E-03	0.53	1
	Chlorobenzene	7.2E-06	9.5E-10	3.7E-03	0.50	1
	Chloroform	7.7E-06	1.1E-09	3.7E-03	0.55	1
	cis-1,2-Dichloroethene	8.8E-06	1.1E-09	4.1E-03	0.56	1
	Dibromochloromethane	3.7E-06	1.1E-09	7.8E-04	0.51	1
	Ethylbenzene	6.8E-06	8.5E-10	7.9E-03	0.46	1
	Methyl Cyclohexane	--	--	--	--	1
	Methylene Chloride	1.0E-05	1.3E-09	3.3E-03	0.60	1
	Tetrachloroethene	5.0E-06	9.5E-10	1.8E-02	0.50	1
	Trichloroethene	6.9E-06	1.0E-09	1.0E-02	0.52	1
	Vinyl Chloride	1.1E-05	1.2E-09	2.7E-02	0.60	1
	Bis(2-Ethylhexyl) Phthalate	3.5E-06	3.7E-10	3.0E-07	0.004	2

Sources:

1. EPA Regional Screening Levels Chemical Specific Parameters. November 2010 version.

Table B-3
Calculation of $Cair_{max}$ and $Cair$ for Adult Resident Both RME and CT Exposures
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Compound	C _w (mg/L) ^a	f _i ^b	Fw ^c		t _i ^d		V _a ^e		$Cair_{max}$ (RME) mg/m ³	$Cair$ (RME) mg/m ³	$Cair_{max}$ (CT) mg/m ³	$Cair$ (CT) mg/m ³
	RME		RME	CT	RME	CT	RME	CT				
1,1,2-Trichloroethane	8.3E-04	0.46	1000	750	0.25	0.1	6	11	1.6E-02	1.3E-02	2.6E-03	2.1E-03
1,2,4-Trichlorobenzene	1.1E-02	0.44	1000	750	0.25	0.1	6	11	2.0E-01	1.6E-01	3.3E-02	2.6E-02
1,1-Dichloroethane	9.1E-02	0.54	1000	750	0.25	0.1	6	11	2.0E+00	1.6E+00	3.3E-01	2.7E-01
1,1-Dichloroethene	2.4E-02	0.55	1000	750	0.25	0.1	6	11	5.6E-01	4.4E-01	9.2E-02	7.3E-02
1,2-Dichloroethane	1.1E-02	0.54	1000	750	0.25	0.1	6	11	2.5E-01	2.0E-01	4.2E-02	3.3E-02
1,2-Dichloropropane	9.7E-04	0.50	1000	750	0.25	0.1	6	11	2.0E-02	1.6E-02	3.3E-03	2.6E-03
1,4-Dioxane	2.0E+00	0.09	1000	750	0.25	0.1	6	11	7.2E+00	5.7E+00	1.2E+00	9.5E-01
Acetone	3.6E-01	0.35	1000	750	0.25	0.1	6	11	5.2E+00	4.0E+00	8.4E-01	6.8E-01
Benzene	6.0E-02	0.52	1000	750	0.25	0.1	6	11	1.3E+00	1.0E+00	2.1E-01	1.7E-01
Bromodichloromethane	1.7E-03	0.53	1000	750	0.25	0.1	6	11	3.9E-02	3.1E-02	6.4E-03	5.1E-03
Chlorobenzene	2.3E-03	0.50	1000	750	0.25	0.1	6	11	4.8E-02	3.8E-02	7.9E-03	6.3E-03
Chloroform	1.8E-02	0.55	1000	750	0.25	0.1	6	11	4.2E-01	3.3E-01	6.9E-02	5.5E-02
cis-1,2-Dichloroethene	2.3E-01	0.56	1000	750	0.25	0.1	6	11	5.5E+00	4.3E+00	9.0E-01	7.2E-01
Dibromochloromethane	6.8E-04	0.51	1000	750	0.25	0.1	6	11	1.4E-02	1.1E-02	2.4E-03	1.9E-03
Ethylbenzene	8.8E-04	0.46	1000	750	0.25	0.1	6	11	1.7E-02	1.3E-02	2.8E-03	2.2E-03
Methyl Cyclohexane	2.8E-04	--	1000	750	0.25	0.1	6	11	--	--	--	--
Methylene Chloride	4.9E-04	0.60	1000	750	0.25	0.1	6	11	1.2E-02	9.6E-03	2.0E-03	1.6E-03
Tetrachloroethene	2.2E-01	0.50	1000	750	0.25	0.1	6	11	4.5E+00	3.5E+00	7.3E-01	5.9E-01
Trichloroethene	7.4E-01	0.52	1000	750	0.25	0.1	6	11	1.6E+01	1.2E+01	2.6E+00	2.1E+00
Vinyl Chloride	1.2E-02	0.60	1000	750	0.25	0.1	6	11	2.9E-01	2.3E-01	4.7E-02	3.8E-02
Bis(2-Ethylhexyl) Phthalate	5.0E-05	0.004	1000	750	0.25	0.1	6	11	7.4E-06	5.8E-06	1.2E-06	9.7E-07

a - Concentration in water from Table 3.1 and converted to mg/L

b - Volatilization fraction calculated in Table B-2

c - Water flow rate (Fw) in L/h as presented in Schaum et al. (1994)

d - Time of shower in hours from Table B1.

e - Volume of bathroom in m³ as presented in Schaum et al. (1994)

Table B-4
Calculation of $Cair_{max}$ and $Cair$ for Child Resident Both RME and CT Exposures
Deep Groundwater (OU-3) - 216 Paterson Plank Road Site, Carlstadt, NJ

Compound	C _w (mg/L) ^a	f _i ^b	Fw ^c		t _i ^d		V _a ^e		$Cair_{max}$ (RME) mg/m ³	$Cair$ (RME) mg/m ³	$Cair_{max}$ (CT) mg/m ³	$Cair$ (CT) mg/m ³
	RME		RME	CT	RME	CT	RME	CT				
1,1,2-Trichloroethane	8.3E-04	0.46	1000	750	0.45	0.14	6	11	2.9E-02	2.2E-02	2.6E-03	2.1E-03
1,2,4-Trichlorobenzene	1.1E-02	0.44	1000	750	0.45	0.14	6	11	3.6E-01	2.8E-01	3.3E-02	2.6E-02
1,1-Dichloroethane	9.1E-02	0.54	1000	750	0.45	0.14	6	11	3.7E+00	2.8E+00	3.3E-01	2.6E-01
1,1-Dichloroethene	2.4E-02	0.55	1000	750	0.45	0.14	6	11	1.0E+00	7.8E-01	9.2E-02	7.2E-02
1,2-Dichloroethane	1.1E-02	0.54	1000	750	0.45	0.14	6	11	4.6E-01	3.5E-01	4.2E-02	3.3E-02
1,2-Dichloropropane	9.7E-04	0.50	1000	750	0.45	0.14	6	11	3.6E-02	2.8E-02	3.3E-03	2.6E-03
1,4-Dioxane	2.0E+00	0.09	1000	750	0.45	0.14	6	11	1.3E+01	1.0E+01	1.2E+00	9.3E-01
Acetone	3.6E-01	0.35	1000	750	0.45	0.14	6	11	9.3E+00	7.2E+00	8.4E-01	6.7E-01
Benzene	6.0E-02	0.52	1000	750	0.45	0.14	6	11	2.3E+00	1.8E+00	2.1E-01	1.7E-01
Bromodichloromethane	1.7E-03	0.53	1000	750	0.45	0.14	6	11	7.0E-02	5.4E-02	6.4E-03	5.0E-03
Chlorobenzene	2.3E-03	0.50	1000	750	0.45	0.14	6	11	8.7E-02	6.8E-02	7.9E-03	6.2E-03
Chloroform	1.8E-02	0.55	1000	750	0.45	0.14	6	11	7.6E-01	5.9E-01	6.9E-02	5.5E-02
cis-1,2-Dichloroethene	2.3E-01	0.56	1000	750	0.45	0.14	6	11	9.9E+00	7.6E+00	9.0E-01	7.1E-01
Dibromochloromethane	6.8E-04	0.51	1000	750	0.45	0.14	6	11	2.6E-02	2.0E-02	2.4E-03	1.9E-03
Ethylbenzene	8.8E-04	0.46	1000	750	0.45	0.14	6	11	3.0E-02	2.4E-02	2.8E-03	2.2E-03
Methyl Cyclohexane	2.8E-04	--	1000	750	0.45	0.14	6	11	--	--	--	--
Methylene Chloride	4.9E-04	0.60	1000	750	0.45	0.14	6	11	2.2E-02	1.7E-02	2.0E-03	1.6E-03
Tetrachloroethene	2.2E-01	0.50	1000	750	0.45	0.14	6	11	8.1E+00	6.3E+00	7.3E-01	5.8E-01
Trichloroethene	7.4E-01	0.52	1000	750	0.45	0.14	6	11	2.9E+01	2.2E+01	2.6E+00	2.0E+00
Vinyl Chloride	1.2E-02	0.60	1000	750	0.45	0.14	6	11	5.2E-01	4.0E-01	4.7E-02	3.7E-02
Bis(2-Ethylhexyl) Phthalate	5.0E-05	0.004	1000	750	0.45	0.14	6	11	1.3E-05	1.0E-05	1.2E-06	9.5E-07

a - Concentration in water from Table 3.1 and converted to mg/L

b - Volatilization fraction calculated in Table B-2

c - Water flow rate (Fw) in L/h as presented in Schaum et al. (1994)

d - Time of shower in hours from Table B1.

e - Volume of bathroom in m³ as presented in Schaum et al. (1994)

APPENDIX C
OU-3 GROUNDWATER DATA TABLES

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			B09-1 B09-1-28-1001003-01	B09-1 B09-1-38-1001003-02	B09-1 B09-1-48-1001003-07	B09-1 B09-1-58-1001003-08	B09-2 B09-2-35-0912109-04	B09-2 B09-2-45-0912109-03
Sample Date N=Normal, FD=Field Duplicate start_depth			1/4/2010 N 24	1/4/2010 N 34	1/5/2010 N 44	1/5/2010 N 54	12/14/2009 N 31	12/14/2009 N 41
Parameter	Unit	NJDEP GWQC	Result Qual QL					
Inorganics								
Aluminum	ug/L	200	NDR	NDR	NDR	NDR	NDR	NDR
Antimony	ug/L	6	NDR	NDR	NDR	NDR	NDR	NDR
Arsenic	ug/L	3	NDR	NDR	NDR	NDR	NDR	NDR
Barium	ug/L	6000	NDR	NDR	NDR	NDR	NDR	NDR
Beryllium	ug/L	1	NDR	NDR	NDR	NDR	NDR	NDR
Cadmium	ug/L	4	NDR	NDR	NDR	NDR	NDR	NDR
Calcium	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Chromium	ug/L	70	NDR	NDR	NDR	NDR	NDR	NDR
Cobalt	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Copper	ug/L	1300	NDR	NDR	NDR	NDR	NDR	NDR
Iron	ug/L	300	NDR	NDR	NDR	NDR	NDR	NDR
Lead	ug/L	5	NDR	NDR	NDR	NDR	NDR	NDR
Magnesium	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Manganese	ug/L	50	NDR	NDR	NDR	NDR	NDR	NDR
Mercury	ug/L	2	NDR	NDR	NDR	NDR	NDR	NDR
Nickel	ug/L	100	NDR	NDR	NDR	NDR	NDR	NDR
Potassium	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Selenium	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR
Silver	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR
Sodium	ug/L	50000	NDR	NDR	NDR	NDR	NDR	NDR
Thallium	ug/L	2	NDR	NDR	NDR	NDR	NDR	NDR
Vanadium	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Zinc	ug/L	2000	NDR	NDR	NDR	NDR	NDR	NDR
PCBs								
Aroclor 1016	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Aroclor 1221	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Aroclor 1232	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Aroclor 1242	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Aroclor 1248	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Aroclor 1254	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Aroclor 1260	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Aroclor 1262	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Aroclor 1268	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Pesticides								
4,4-DDD	ug/L	0.1	NDR	NDR	NDR	NDR	NDR	NDR
4,4-DDE	ug/L	0.1	NDR	NDR	NDR	NDR	NDR	NDR
4,4-DDT	ug/L	0.1	NDR	NDR	NDR	NDR	NDR	NDR
Aldrin	ug/L	0.04	NDR	NDR	NDR	NDR	NDR	NDR
alpha-BHC	ug/L	0.02	NDR	NDR	NDR	NDR	NDR	NDR
alpha-Chlordane	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
alpha-Endosulfan	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code Sample Date N=Normal, FD=Field Duplicate start_depth			B09-1 B09-1-28-1001003-01 1/4/2010 N 24	B09-1 B09-1-38-1001003-02 1/4/2010 N 34	B09-1 B09-1-48-1001003-07 1/5/2010 N 44	B09-1 B09-1-58-1001003-08 1/5/2010 N 54	B09-2 B09-2-35-0912109-04 12/14/2009 N 31	B09-2 B09-2-45-0912109-03 12/14/2009 N 41	
Parameter	Unit	NJDEP GWQC	Result Qual QL	Result Qual QL	Result Qual QL				
beta-BHC	ug/L	0.04	NDR	NDR	NDR	NDR	NDR	NDR	NDR
beta-Endosulfan	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR	NDR
delta-BHC	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Die�din	ug/L	0.03	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Endosulfan Sulfate	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Endrin	ug/L	2	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Endrin Aldehyde	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Endrin Ketone	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
gamma-BHC	ug/L	0.03	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Heptachlor	ug/L	0.05	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Heptachlor Epoxide	ug/L	0.2	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Methoxychlor	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Toxaphene	ug/L	2	NDR	NDR	NDR	NDR	NDR	NDR	NDR
trans-Chlordane	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Semivolatile Organic Compounds									
1,2,4,5-Tetrachlorobenzene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
2,3,4,6-Tetrachlorophenol	ug/L	200	NDR	NDR	NDR	NDR	NDR	NDR	NDR
2,4,5-Trichlorophenol	ug/L	700	NDR	NDR	NDR	NDR	NDR	NDR	NDR
2,4,6-Trichlorophenol	ug/L	20	NDR	NDR	NDR	NDR	NDR	NDR	NDR
2,4-Dichlorophenol	ug/L	20	NDR	NDR	NDR	NDR	NDR	NDR	NDR
2,4-Dimethylphenol	ug/L	100	NDR	NDR	NDR	NDR	NDR	NDR	NDR
2,4-Dinitrophenol	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR	NDR
2,4-Dinitrotoluene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
2,6-Dinitrotoluene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
2-Chloronaphthalene	ug/L	600	NDR	NDR	NDR	NDR	NDR	NDR	NDR
2-Chlorophenol	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR	NDR
2-Methylnaphthalene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
2-Methylphenol	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
2-Nitroaniline	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
2-Nitrophenol	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
3,3'-Dichlorobenzidine	ug/L	30	NDR	NDR	NDR	NDR	NDR	NDR	NDR
3-Nitroaniline	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
4,6-Dinitro-2-methylphenol	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
4-Bromophenyl Phenyl Ether	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
4-Chloro-3-methylphenol	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
4-Chloroaniline	ug/L	30	NDR	NDR	NDR	NDR	NDR	NDR	NDR
4-Chlorophenyl-phenylether	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
4-Methylphenol	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
4-Nitroaniline	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
4-Nitrophenol	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Acenaphthene	ug/L	400	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Acenaphthylene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Acetophenone	ug/L	700	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Anthracene	ug/L	2000	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Atrazine	ug/L	3	NDR	NDR	NDR	NDR	NDR	NDR	NDR

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code Sample Date N=Normal, FD=Field Duplicate start_depth			B09-1 B09-1-28-1001003-01 1/4/2010 N 24	B09-1 B09-1-38-1001003-02 1/4/2010 N 34	B09-1 B09-1-48-1001003-07 1/5/2010 N 44	B09-1 B09-1-58-1001003-08 1/5/2010 N 54	B09-2 B09-2-35-0912109-04 12/14/2009 N 31	B09-2 B09-2-45-0912109-03 12/14/2009 N 41	
Parameter	Unit	NJDEP GWQC	Result Qual QL	Result Qual QL	Result Qual QL				
Benzaldehyde	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Benzo[a]anthracene	ug/L	0.1	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Benzo[a]pyrene	ug/L	0.1	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Benzo[b]fluoranthene	ug/L	0.2	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Benzo[g,h,i]perylene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Benzo[k]fluoranthene	ug/L	0.5	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Biphenyl	ug/L	400	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Bis(2-chloroethoxy)methane	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Bis(2-chloroethyl) Ether	ug/L	7	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Bis(2-chloroisopropyl) Ether	ug/L	300	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Bis(2-ethylhexyl) Phthalate	ug/L	3	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Butylbenzyl Phthalate	ug/L	100	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Caprolactum	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Carbazole	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Chrysene	ug/L	5	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Dibenzo[a,h]anthracene	ug/L	0.3	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Dibenzofuran	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Diethyl Phthalate	ug/L	6000	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Dimethyl Phthalate	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Di-n-Butyl Phthalate	ug/L	700	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Di-n-octyl Phthalate	ug/L	100	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Fluoranthene	ug/L	300	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Fluorene	ug/L	300	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Hexachlorobenzene	ug/L	0.02	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Hexachlorobutadiene	ug/L	1	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Hexachlorocyclopentadiene	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Hexachloroethane	ug/L	7	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Indeno[1,2,3-cd]pyrene	ug/L	0.2	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Isophorone	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Naphthalene	ug/L	300	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Nitrobenzene	ug/L	6	NDR	NDR	NDR	NDR	NDR	NDR	NDR
N-Nitroso-di-n-propylamine	ug/L	10	NDR	NDR	NDR	NDR	NDR	NDR	NDR
N-Nitrosodiphenylamine	ug/L	10	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Pentachlorophenol	ug/L	0.3	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Phenanthrene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Phenol	ug/L	2000	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Pyrene	ug/L	200	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Volatile Organic Compounds									
1,1,1-Trichloroethane	ug/L	30	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5				
1,1,2,2-Tetrachloroethane	ug/L	2	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5				
1,1,2-Trichloroethane	ug/L	3	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5				
1,1-Dichloroethane	ug/L	70	0.19 J 0.5	0.32 J 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5
1,1-Dichloroethene	ug/L	2	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5				
1,2,3-Trichlorobenzene	ug/L	NS	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5				
1,2,4-Trichlorobenzene	ug/L	9	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5				
1,2-Dibromo-3-chloropropane	ug/L	0.02	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5				

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code Sample Date N=Normal, FD=Field Duplicate start_depth			B09-1 B09-1-28-1001003-01 1/4/2010 N 24	B09-1 B09-1-38-1001003-02 1/4/2010 N 34	B09-1 B09-1-48-1001003-07 1/5/2010 N 44	B09-1 B09-1-58-1001003-08 1/5/2010 N 54	B09-2 B09-2-35-0912109-04 12/14/2009 N 31	B09-2 B09-2-45-0912109-03 12/14/2009 N 41	
Parameter	Unit	NJDEP GWQC	Result Qual QL	Result Qual QL	Result Qual QL				
1,2-Dibromoethane	ug/L	0.03	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5				
1,2-Dichlorobenzene	ug/L	600	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5				
1,2-Dichloroethane	ug/L	2	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5				
1,2-Dichloropropane	ug/L	1	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5				
1,3-Dichlorobenzene	ug/L	600	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5				
1,4-Dichlorobenzene	ug/L	75	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5				
1,4-Dioxane	ug/L	NS	240	17	420	50	340	17	97
2-Butanone	ug/L	300	5.7	5	5	U 5	5	U 5	3.8 J 5
2-Hexanone	ug/L	NS	5	U 5	5	U 5	5	U 5	5 U 5
4-Methyl-2-pentanone	ug/L	NS	71	5	5.7	5	69	5	6.4 5
Acetone	ug/L	6000	33	5	13	U 13	1100	50	3100 130
Benzene	ug/L	1	0.19	J 0.5	0.5	U 0.5	0.5	U 0.5	1.8 0.5
Bromochloromethane	ug/L	NS	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
Bromodichloromethane	ug/L	1	3	0.5	7	0.5	5.9	0.5	3.1 0.5
Bromoform	ug/L	4	0.5	U 0.5	0.16	J 0.5	0.2	J 0.5	0.5 U 0.5
Bromomethane	ug/L	10	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
Carbon Disulfide	ug/L	700	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
Carbon Tetrachloride	ug/L	2	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
Chlorobenzene	ug/L	4	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
Chloroethane	ug/L	NS	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
Chloroform	ug/L	6	6.5	0.5	8.2	0.5	7.6	0.5	6.8 0.5
Chloromethane	ug/L	NS	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
cis-1,2-Dichloroethene	ug/L	10	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
cis-1,3-Dichloropropene	ug/L	NS	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
Cyclohexane	ug/L	NS	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
Dibromochloromethane	ug/L	10	0.88	0.5	2.5	0.5	2	0.5	0.93 0.5
Dichlorodifluoromethane	ug/L	1000	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
Ethylbenzene	ug/L	700	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.16 J 0.5
Freon 113	ug/L	NS	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
Isopropylbenzene	ug/L	700	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
m,p-Xylenes	ug/L	NS	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.29 J 0.5
Methyl Acetate	ug/L	7000	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
Methyl Cyclohexane	ug/L	NS	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
Methyl tert-Butyl Ether	ug/L	70	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
Methylene Chloride	ug/L	2	0.26	J 0.5	0.5	U 0.5	0.13	J 0.5	0.23 J 0.5
o-Xylene	ug/L	NS	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.16 J 0.5
Styrene	ug/L	100	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
Tetrachloroethene	ug/L	1	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
Toluene	ug/L	600	0.11	J 0.5	0.5	U 0.5	0.11	J 0.5	0.15 J 0.5
trans-1,2-Dichloroethene	ug/L	100	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
trans-1,3-Dichloropropene	ug/L	NS	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
Trichloroethene	ug/L	1	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	3.2 0.5
Trichlorofluoromethane	ug/L	2000	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.5 U 0.5
Vinyl Chloride	ug/L	5	0.5	U 0.5	0.5	U 0.5	0.5	U 0.5	0.67 J 0.5
Xylenes, Total	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR	NDR

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			B09-1 B09-1-28-1001003-01	B09-1 B09-1-38-1001003-02	B09-1 B09-1-48-1001003-07	B09-1 B09-1-58-1001003-08	B09-2 B09-2-35-0912109-04	B09-2 B09-2-45-0912109-03									
Sample Date N=Normal, FD=Field Duplicate start_depth			1/4/2010 N 24	1/4/2010 N 34	1/5/2010 N 44	1/5/2010 N 54	12/14/2009 N 31	12/14/2009 N 41									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Biodegradation Indicator Gases																	
Ethane	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Ethene	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Methane	ug/L	NS	NDR			NDR			NDR			NDR			NDR		

Notes:

ug/L = micrograms per liter

Qual = validated qualifier

QL = Quantitation Limit

NDR = no data reported

NS = no standard available

Qualifiers:

J - Result or reporting limit is estimated.

U - Result was not detected at or
above the method detection limit.

R - Result was rejected.

* NJDEP GWQC: Higher of the Practical Quantitation Limit
and Ground Water Quality Criterion (N.J.A.C. 7:9C) 07/2010,
as well as Interim Groundwater Quality Criteria.

Inorganic results from MW-21R sampled in December 2009
were unfiltered grab samples collected for Bench Testing
and were not used in the Risk Assessment

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			B09-2 B09-2-55-0912109-02	B09-2 B09-2-65-0912109-01	B09-3 B09-3-30-1001003-10	B09-3 B09-3-40-1001003-11	B09-3 B09-3-50-1001003-12	B09-3 B09-3-60-1001003-13									
Sample Date N=Normal, FD=Field Duplicate start_depth			12/14/2009 N 51	12/14/2009 N 61	1/7/2010 N 26	1/7/2010 N 36	1/7/2010 N 46	1/7/2010 N 56									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Inorganics																	
Aluminum	ug/L	200	NDR			NDR			NDR			NDR			NDR		
Antimony	ug/L	6	NDR			NDR			NDR			NDR			NDR		
Arsenic	ug/L	3	NDR			NDR			NDR			NDR			NDR		
Barium	ug/L	6000	NDR			NDR			NDR			NDR			NDR		
Beryllium	ug/L	1	NDR			NDR			NDR			NDR			NDR		
Cadmium	ug/L	4	NDR			NDR			NDR			NDR			NDR		
Calcium	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Chromium	ug/L	70	NDR			NDR			NDR			NDR			NDR		
Cobalt	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Copper	ug/L	1300	NDR			NDR			NDR			NDR			NDR		
Iron	ug/L	300	NDR			NDR			NDR			NDR			NDR		
Lead	ug/L	5	NDR			NDR			NDR			NDR			NDR		
Magnesium	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Manganese	ug/L	50	NDR			NDR			NDR			NDR			NDR		
Mercury	ug/L	2	NDR			NDR			NDR			NDR			NDR		
Nickel	ug/L	100	NDR			NDR			NDR			NDR			NDR		
Potassium	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Selenium	ug/L	40	NDR			NDR			NDR			NDR			NDR		
Silver	ug/L	40	NDR			NDR			NDR			NDR			NDR		
Sodium	ug/L	50000	NDR			NDR			NDR			NDR			NDR		
Thallium	ug/L	2	NDR			NDR			NDR			NDR			NDR		
Vanadium	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Zinc	ug/L	2000	NDR			NDR			NDR			NDR			NDR		
PCBs																	
Aroclor 1016	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1221	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1232	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1242	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1248	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1254	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1260	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1262	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1268	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Pesticides																	
4,4-DDD	ug/L	0.1	NDR			NDR			NDR			NDR			NDR		
4,4-DDE	ug/L	0.1	NDR			NDR			NDR			NDR			NDR		
4,4-DDT	ug/L	0.1	NDR			NDR			NDR			NDR			NDR		
Aldrin	ug/L	0.04	NDR			NDR			NDR			NDR			NDR		
alpha-BHC	ug/L	0.02	NDR			NDR			NDR			NDR			NDR		
alpha-Chlordane	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
alpha-Endosulfan	ug/L	40	NDR			NDR			NDR			NDR			NDR		

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			B09-2 B09-2-55-0912109-02	B09-2 B09-2-65-0912109-01	B09-3 B09-3-30-1001003-10	B09-3 B09-3-40-1001003-11	B09-3 B09-3-50-1001003-12	B09-3 B09-3-60-1001003-13
Sample Date N=Normal, FD=Field Duplicate start_depth			12/14/2009 N 51	12/14/2009 N 61	1/7/2010 N 26	1/7/2010 N 36	1/7/2010 N 46	1/7/2010 N 56
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL
beta-BHC	ug/L	0.04	NDR	NDR	NDR	NDR	NDR	NDR
beta-Endosulfan	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR
delta-BHC	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Dieldrin	ug/L	0.03	NDR	NDR	NDR	NDR	NDR	NDR
Endosulfan Sulfate	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR
Endrin	ug/L	2	NDR	NDR	NDR	NDR	NDR	NDR
Endrin Aldehyde	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Endrin Ketone	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
gamma-BHC	ug/L	0.03	NDR	NDR	NDR	NDR	NDR	NDR
Heptachlor	ug/L	0.05	NDR	NDR	NDR	NDR	NDR	NDR
Heptachlor Epoxide	ug/L	0.2	NDR	NDR	NDR	NDR	NDR	NDR
Methoxychlor	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR
Toxaphene	ug/L	2	NDR	NDR	NDR	NDR	NDR	NDR
trans-Chlordane	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Semivolatile Organic Compounds								
1,2,4,5-Tetrachlorobenzene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
2,3,4,6-Tetrachlorophenol	ug/L	200	NDR	NDR	NDR	NDR	NDR	NDR
2,4,5-Trichlorophenol	ug/L	700	NDR	NDR	NDR	NDR	NDR	NDR
2,4,6-Trichlorophenol	ug/L	20	NDR	NDR	NDR	NDR	NDR	NDR
2,4-Dichlorophenol	ug/L	20	NDR	NDR	NDR	NDR	NDR	NDR
2,4-Dimethylphenol	ug/L	100	NDR	NDR	NDR	NDR	NDR	NDR
2,4-Dinitrophenol	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR
2,4-Dinitrotoluene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
2,6-Dinitrotoluene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
2-Chloronaphthalene	ug/L	600	NDR	NDR	NDR	NDR	NDR	NDR
2-Chlorophenol	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR
2-Methylnaphthalene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
2-Methylphenol	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
2-Nitroaniline	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
2-Nitrophenol	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
3,3'-Dichlorobenzidine	ug/L	30	NDR	NDR	NDR	NDR	NDR	NDR
3-Nitroaniline	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
4,6-Dinitro-2-methylphenol	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
4-Bromophenyl Phenyl Ether	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
4-Chloro-3-methylphenol	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
4-Chloroaniline	ug/L	30	NDR	NDR	NDR	NDR	NDR	NDR
4-Chlorophenyl-phenylether	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
4-Methylphenol	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
4-Nitroaniline	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
4-Nitrophenol	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Acenaphthene	ug/L	400	NDR	NDR	NDR	NDR	NDR	NDR
Acenaphthylene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Acetophenone	ug/L	700	NDR	NDR	NDR	NDR	NDR	NDR
Anthracene	ug/L	2000	NDR	NDR	NDR	NDR	NDR	NDR
Atrazine	ug/L	3	NDR	NDR	NDR	NDR	NDR	NDR

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			B09-2 B09-2-55-0912109-02	B09-2 B09-2-65-0912109-01	B09-3 B09-3-30-1001003-10	B09-3 B09-3-40-1001003-11	B09-3 B09-3-50-1001003-12	B09-3 B09-3-60-1001003-13									
Sample Date N=Normal, FD=Field Duplicate start_depth			12/14/2009 N 51	12/14/2009 N 61	1/7/2010 N 26	1/7/2010 N 36	1/7/2010 N 46	1/7/2010 N 56									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Benzaldehyde	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Benzo[a]anthracene	ug/L	0.1	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Benzo[a]pyrene	ug/L	0.1	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Benzo[b]fluoranthene	ug/L	0.2	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Benzo[g,h,i]perylene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Benzo[k]fluoranthene	ug/L	0.5	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Biphenyl	ug/L	400	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Bis(2-chloroethoxy)methane	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Bis(2-chloroethyl) Ether	ug/L	7	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Bis(2-chloroisopropyl) Ether	ug/L	300	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Bis(2-ethylhexyl) Phthalate	ug/L	3	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Butylbenzyl Phthalate	ug/L	100	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Caprolactum	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Carbazole	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Chrysene	ug/L	5	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Dibenzo[a,h]anthracene	ug/L	0.3	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Dibenzofuran	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Diethyl Phthalate	ug/L	6000	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Dimethyl Phthalate	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Di-n-Butyl Phthalate	ug/L	700	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Di-n-octyl Phthalate	ug/L	100	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Fluoranthene	ug/L	300	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Fluorene	ug/L	300	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Hexachlorobenzene	ug/L	0.02	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Hexachlorobutadiene	ug/L	1	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Hexachlorocyclopentadiene	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Hexachloroethane	ug/L	7	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Indeno[1,2,3-cd]pyrene	ug/L	0.2	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Isophorone	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Naphthalene	ug/L	300	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Nitrobenzene	ug/L	6	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
N-Nitroso-di-n-propylamine	ug/L	10	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
N-Nitrosodiphenylamine	ug/L	10	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Pentachlorophenol	ug/L	0.3	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Phenanthrene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Phenol	ug/L	2000	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Pyrene	ug/L	200	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Volatile Organic Compounds																	
1,1,1-Trichloroethane	ug/L	30	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,1,2,2-Tetrachloroethane	ug/L	2	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,1,2-Trichloroethane	ug/L	3	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,1-Dichloroethane	ug/L	70	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,1-Dichloroethene	ug/L	2	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,2,3-Trichlorobenzene	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,2,4-Trichlorobenzene	ug/L	9	0.19	J	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,2-Dibromo-3-chloropropane	ug/L	0.02	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			B09-2 B09-2-55-0912109-02	B09-2 B09-2-65-0912109-01	B09-3 B09-3-30-1001003-10	B09-3 B09-3-40-1001003-11	B09-3 B09-3-50-1001003-12	B09-3 B09-3-60-1001003-13									
Sample Date N=Normal, FD=Field Duplicate start_depth			12/14/2009 N 51	12/14/2009 N 61	1/7/2010 N 26	1/7/2010 N 36	1/7/2010 N 46	1/7/2010 N 56									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
1,2-Dibromoethane	ug/L	0.03	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,2-Dichlorobenzene	ug/L	600	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,2-Dichloroethane	ug/L	2	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,2-Dichloropropane	ug/L	1	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,3-Dichlorobenzene	ug/L	600	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,4-Dichlorobenzene	ug/L	75	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,4-Dioxane	ug/L	NS	28	2	5.1	2	440	25	4300	250	63	6.3	5.6	2			
2-Butanone	ug/L	300	5	U	5	5	U	5	2.2	J	5	5	U	5	5	U	5
2-Hexanone	ug/L	NS	5	U	5	5	U	5	5	U	5	5	U	5	5	U	5
4-Methyl-2-pentanone	ug/L	NS	5	U	5	5	U	5	16		5	2.1	J	5	23		5
Acetone	ug/L	6000	9.5	U	9.5	9.1	U	9.1	14	U	14	6.2	U	6.2	10	U	10
Benzene	ug/L	1	1.4		0.5	0.5	U	0.5	0.5	U	0.5	0.17	J	0.5	0.5	U	0.5
Bromochloromethane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Bromodichloromethane	ug/L	1	0.87		0.5	4		0.5	5.8		0.5	1.7		0.5	6.7		0.5
Bromoform	ug/L	4	0.5	U	0.5	0.5	U	0.5	0.12	J	0.5	0.5	U	0.5	0.84		0.5
Bromomethane	ug/L	10	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Carbon Disulfide	ug/L	700	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Carbon Tetrachloride	ug/L	2	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Chlorobenzene	ug/L	4	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Chloroethane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Chloroform	ug/L	6	3.9		0.5	8.8		0.5	7.5		0.5	2.4		0.5	9.2		0.5
Chloromethane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
cis-1,2-Dichloroethene	ug/L	10	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.19	J	0.5	0.5	U	0.5
cis-1,3-Dichloropropene	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Cyclohexane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Dibromochloromethane	ug/L	10	0.23	J	0.5	1.1		0.5	2		0.5	0.55		0.5	2.5		0.5
Dichlorodifluoromethane	ug/L	1000	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Ethylbenzene	ug/L	700	0.5	U	0.5	0.5	U	0.5	1.6		0.5	0.5	U	0.5	0.5	U	0.5
Freon 113	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Isopropylbenzene	ug/L	700	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
m,p-Xylenes	ug/L	NS	0.5	U	0.5	0.5	U	0.5	4.5		0.5	0.23	J	0.5	0.5	U	0.5
Methyl Acetate	ug/L	7000	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Methyl Cyclohexane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Methyl tert-Butyl Ether	ug/L	70	0.12	J	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Methylene Chloride	ug/L	2	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
o-Xylene	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.34	J	0.5	0.5	U	0.5	0.5	U	0.5
Styrene	ug/L	100	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Tetrachloroethene	ug/L	1	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Toluene	ug/L	600	1.3		0.5	0.15	J	0.5	0.37	J	0.5	0.13	J	0.5	0.18	J	0.5
trans-1,2-Dichloroethene	ug/L	100	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
trans-1,3-Dichloropropene	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Trichloroethene	ug/L	1	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Trichlorofluoromethane	ug/L	2000	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Vinyl Chloride	ug/L	5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Xylenes, Total	ug/L	40	NDR		NDR		NDR		NDR		NDR		NDR		NDR		NDR

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			B09-2 B09-2-55-0912109-02	B09-2 B09-2-65-0912109-01	B09-3 B09-3-30-1001003-10	B09-3 B09-3-40-1001003-11	B09-3 B09-3-50-1001003-12	B09-3 B09-3-60-1001003-13									
Sample Date N=Normal, FD=Field Duplicate			12/14/2009 N 51	12/14/2009 N 61	1/7/2010 N 26	1/7/2010 N 36	1/7/2010 N 46	1/7/2010 N 56									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Biodegradation Indicator Gases																	
Ethane	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Ethene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Methane	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR

Notes:

ug/L = micrograms per liter

Qual = validated qualifier

QL = Quantitation Limit

NDR = no data reported

NS = no standard available

Qualifiers:

J - Result or reporting limit is estimated.

U - Result was not detected at or
above the method detection limit.

R - Result was rejected.

* NJDEP GWQC: Higher of the Practical Quantitation Limit
and Ground Water Quality Criterion (N.J.A.C. 7:9C) 07/2010,
as well as Interim Groundwater Quality Criteria.

Inorganic results from MW-21R sampled in December 2009
were unfiltered grab samples collected for Bench Testing
and were not used in the Risk Assessment

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

		Sample ID sys_sample_code	B09-4 B09-4-20-1001053-03	B09-4 B09-4-30-1001003-17	B09-4 B09-4-35-1001003-18	B09-5 B09-5-20-1001053-01	B09-5 B09-5-30-1001003-14	B09-5 B09-5-36-1001003-15
		Sample Date	1/13/2010	1/13/2010	1/13/2010	1/12/2010	1/12/2010	1/12/2010
		N=Normal, FD=Field Duplicate start_depth	N 16	N 26	N 31	N 16	N 26	N 32
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL
Inorganics								
Aluminum	ug/L	200	NDR		NDR	NDR	NDR	NDR
Antimony	ug/L	6	NDR		NDR	NDR	NDR	NDR
Arsenic	ug/L	3	NDR		NDR	NDR	NDR	NDR
Barium	ug/L	6000	NDR		NDR	NDR	NDR	NDR
Beryllium	ug/L	1	NDR		NDR	NDR	NDR	NDR
Cadmium	ug/L	4	NDR		NDR	NDR	NDR	NDR
Calcium	ug/L	NS	NDR		NDR	NDR	NDR	NDR
Chromium	ug/L	70	NDR		NDR	NDR	NDR	NDR
Cobalt	ug/L	NS	NDR		NDR	NDR	NDR	NDR
Copper	ug/L	1300	NDR		NDR	NDR	NDR	NDR
Iron	ug/L	300	NDR		NDR	NDR	NDR	NDR
Lead	ug/L	5	NDR		NDR	NDR	NDR	NDR
Magnesium	ug/L	NS	NDR		NDR	NDR	NDR	NDR
Manganese	ug/L	50	NDR		NDR	NDR	NDR	NDR
Mercury	ug/L	2	NDR		NDR	NDR	NDR	NDR
Nickel	ug/L	100	NDR		NDR	NDR	NDR	NDR
Potassium	ug/L	NS	NDR		NDR	NDR	NDR	NDR
Selenium	ug/L	40	NDR		NDR	NDR	NDR	NDR
Silver	ug/L	40	NDR		NDR	NDR	NDR	NDR
Sodium	ug/L	50000	NDR		NDR	NDR	NDR	NDR
Thallium	ug/L	2	NDR		NDR	NDR	NDR	NDR
Vanadium	ug/L	NS	NDR		NDR	NDR	NDR	NDR
Zinc	ug/L	2000	NDR		NDR	NDR	NDR	NDR
PCBs								
Aroclor 1016	ug/L	NS	NDR		NDR	NDR	NDR	NDR
Aroclor 1221	ug/L	NS	NDR		NDR	NDR	NDR	NDR
Aroclor 1232	ug/L	NS	NDR		NDR	NDR	NDR	NDR
Aroclor 1242	ug/L	NS	NDR		NDR	NDR	NDR	NDR
Aroclor 1248	ug/L	NS	NDR		NDR	NDR	NDR	NDR
Aroclor 1254	ug/L	NS	NDR		NDR	NDR	NDR	NDR
Aroclor 1260	ug/L	NS	NDR		NDR	NDR	NDR	NDR
Aroclor 1262	ug/L	NS	NDR		NDR	NDR	NDR	NDR
Aroclor 1268	ug/L	NS	NDR		NDR	NDR	NDR	NDR
Pesticides								
4,4-DDD	ug/L	0.1	NDR		NDR	NDR	NDR	NDR
4,4-DDE	ug/L	0.1	NDR		NDR	NDR	NDR	NDR
4,4-DDT	ug/L	0.1	NDR		NDR	NDR	NDR	NDR
Aldrin	ug/L	0.04	NDR		NDR	NDR	NDR	NDR
alpha-BHC	ug/L	0.02	NDR		NDR	NDR	NDR	NDR
alpha-Chlordane	ug/L	NS	NDR		NDR	NDR	NDR	NDR
alpha-Endosulfan	ug/L	40	NDR		NDR	NDR	NDR	NDR

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

			Sample ID sys_sample_code	B09-4 B09-4-20-1001053-03			B09-4 B09-4-30-1001003-17			B09-4 B09-4-35-1001003-18			B09-5 B09-5-20-1001053-01			B09-5 B09-5-30-1001003-14			B09-5 B09-5-36-1001003-15				
			Sample Date	1/13/2010			1/13/2010			1/13/2010			1/12/2010			1/12/2010			1/12/2010				
			N=start_depth	N 16			N 26			N 31			N 16			N 26			N 32				
Parameter	Unit	NJDEP GWQC		Result	Qual	QL																	
beta-BHC	ug/L	0.04		NDR			NDR			NDR			NDR			NDR			NDR				
beta-Endosulfan	ug/L	40		NDR			NDR			NDR			NDR			NDR			NDR				
delta-BHC	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
Dieldrin	ug/L	0.03		NDR			NDR			NDR			NDR			NDR			NDR				
Endosulfan Sulfate	ug/L	40		NDR			NDR			NDR			NDR			NDR			NDR				
Endrin	ug/L	2		NDR			NDR			NDR			NDR			NDR			NDR				
Endrin Aldehyde	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
Endrin Ketone	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
gamma-BHC	ug/L	0.03		NDR			NDR			NDR			NDR			NDR			NDR				
Heptachlor	ug/L	0.05		NDR			NDR			NDR			NDR			NDR			NDR				
Heptachlor Epoxide	ug/L	0.2		NDR			NDR			NDR			NDR			NDR			NDR				
Methoxychlor	ug/L	40		NDR			NDR			NDR			NDR			NDR			NDR				
Toxaphene	ug/L	2		NDR			NDR			NDR			NDR			NDR			NDR				
trans-Chlordane	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
Semivolatile Organic Compounds																							
1,2,4,5-Tetrachlorobenzene	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
2,3,4,6-Tetrachlorophenol	ug/L	200		NDR			NDR			NDR			NDR			NDR			NDR				
2,4,5-Trichlorophenol	ug/L	700		NDR			NDR			NDR			NDR			NDR			NDR				
2,4,6-Trichlorophenol	ug/L	20		NDR			NDR			NDR			NDR			NDR			NDR				
2,4-Dichlorophenol	ug/L	20		NDR			NDR			NDR			NDR			NDR			NDR				
2,4-Dimethylphenol	ug/L	100		NDR			NDR			NDR			NDR			NDR			NDR				
2,4-Dinitrophenol	ug/L	40		NDR			NDR			NDR			NDR			NDR			NDR				
2,4-Dinitrotoluene	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
2,6-Dinitrotoluene	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
2-Chloronaphthalene	ug/L	600		NDR			NDR			NDR			NDR			NDR			NDR				
2-Chlorophenol	ug/L	40		NDR			NDR			NDR			NDR			NDR			NDR				
2-Methylnaphthalene	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
2-Methylphenol	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
2-Nitroaniline	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
2-Nitrophenol	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
3,3'-Dichlorobenzidine	ug/L	30		NDR			NDR			NDR			NDR			NDR			NDR				
3-Nitroaniline	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
4,6-Dinitro-2-methylphenol	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
4-Bromophenyl Phenyl Ether	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
4-Chloro-3-methylphenol	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
4-Chloroaniline	ug/L	30		NDR			NDR			NDR			NDR			NDR			NDR				
4-Chlorophenyl-phenylether	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
4-Methylphenol	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
4-Nitroaniline	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
4-Nitrophenol	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
Acenaphthene	ug/L	400		NDR			NDR			NDR			NDR			NDR			NDR				
Acenaphthylene	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
Acetophenone	ug/L	700		NDR			NDR			NDR			NDR			NDR			NDR				
Anthracene	ug/L	2000		NDR			NDR			NDR			NDR			NDR			NDR				
Atrazine	ug/L	3		NDR			NDR			NDR			NDR			NDR			NDR				

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
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			Sample ID sys_sample_code	B09-4 B09-4-20-1001053-03			B09-4 B09-4-30-1001003-17			B09-4 B09-4-35-1001003-18			B09-5 B09-5-20-1001053-01			B09-5 B09-5-30-1001003-14			B09-5 B09-5-36-1001003-15				
			Sample Date	1/13/2010			1/13/2010			1/13/2010			1/12/2010			1/12/2010			1/12/2010				
			N=start_depth	N 16			N 26			N 31			N 16			N 26			N 32				
Parameter	Unit	NJDEP GWQC		Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL		
Benzaldehyde	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
Benzo[a]anthracene	ug/L	0.1		NDR			NDR			NDR			NDR			NDR			NDR				
Benzo[a]pyrene	ug/L	0.1		NDR			NDR			NDR			NDR			NDR			NDR				
Benzo[b]fluoranthene	ug/L	0.2		NDR			NDR			NDR			NDR			NDR			NDR				
Benzo[g,h,i]perylene	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
Benzo[k]fluoranthene	ug/L	0.5		NDR			NDR			NDR			NDR			NDR			NDR				
Biphenyl	ug/L	400		NDR			NDR			NDR			NDR			NDR			NDR				
Bis(2-chloroethoxy)methane	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
Bis(2-chloroethyl) Ether	ug/L	7		NDR			NDR			NDR			NDR			NDR			NDR				
Bis(2-chloroisopropyl) Ether	ug/L	300		NDR			NDR			NDR			NDR			NDR			NDR				
Bis(2-ethylhexyl) Phthalate	ug/L	3		NDR			NDR			NDR			NDR			NDR			NDR				
Butylbenzyl Phthalate	ug/L	100		NDR			NDR			NDR			NDR			NDR			NDR				
Caprolactum	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
Carbazole	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
Chrysene	ug/L	5		NDR			NDR			NDR			NDR			NDR			NDR				
Dibenzo[a,h]anthracene	ug/L	0.3		NDR			NDR			NDR			NDR			NDR			NDR				
Dibenzo furan	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
Diethyl Phthalate	ug/L	6000		NDR			NDR			NDR			NDR			NDR			NDR				
Dimethyl Phthalate	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
Di-n-Butyl Phthalate	ug/L	700		NDR			NDR			NDR			NDR			NDR			NDR				
Di-n-octyl Phthalate	ug/L	100		NDR			NDR			NDR			NDR			NDR			NDR				
Fluoranthene	ug/L	300		NDR			NDR			NDR			NDR			NDR			NDR				
Fluorene	ug/L	300		NDR			NDR			NDR			NDR			NDR			NDR				
Hexachlorobenzene	ug/L	0.02		NDR			NDR			NDR			NDR			NDR			NDR				
Hexachlorobutadiene	ug/L	1		NDR			NDR			NDR			NDR			NDR			NDR				
Hexachlorocyclopentadiene	ug/L	40		NDR			NDR			NDR			NDR			NDR			NDR				
Hexachloroethane	ug/L	7		NDR			NDR			NDR			NDR			NDR			NDR				
Indeno[1,2,3-cd]pyrene	ug/L	0.2		NDR			NDR			NDR			NDR			NDR			NDR				
Isophorone	ug/L	40		NDR			NDR			NDR			NDR			NDR			NDR				
Naphthalene	ug/L	300		NDR			NDR			NDR			NDR			NDR			NDR				
Nitrobenzene	ug/L	6		NDR			NDR			NDR			NDR			NDR			NDR				
N-Nitroso-di-n-propylamine	ug/L	10		NDR			NDR			NDR			NDR			NDR			NDR				
N-Nitrosodiphenylamine	ug/L	10		NDR			NDR			NDR			NDR			NDR			NDR				
Pentachlorophenol	ug/L	0.3		NDR			NDR			NDR			NDR			NDR			NDR				
Phenanthrene	ug/L	NS		NDR			NDR			NDR			NDR			NDR			NDR				
Phenol	ug/L	2000		NDR			NDR			NDR			NDR			NDR			NDR				
Pyrene	ug/L	200		NDR			NDR			NDR			NDR			NDR			NDR				
Volatile Organic Compounds																							
1,1,1-Trichloroethane	ug/L	30		NDR			1.4	J	6.3	0.93	J	4.2	NDR			1.1	0.5	6.9	J	18			
1,1,2,2-Tetrachloroethane	ug/L	2		NDR			6.3	U	6.3	4.2	U	4.2	NDR			0.5	U	0.5	18	R	18		
1,1,2-Trichloroethane	ug/L	3		NDR			6.3	U	6.3	4.2	U	4.2	NDR			0.5	U	0.5	18	R	18		
1,1-Dichloroethane	ug/L	70		NDR			2.7	J	6.3	4.8		4.2	NDR			0.41	J	0.5	30	J	18		
1,1-Dichloroethene	ug/L	2		NDR			6.3	U	6.3	11		4.2	NDR			0.74	0.5	72	J	18			
1,2,3-Trichlorobenzene	ug/L	NS		NDR			6.3	U	6.3	4.2	U	4.2	NDR			0.5	U	0.5	18	R	18		
1,2,4-Trichlorobenzene	ug/L	9		NDR			6.3	U	6.3	4.2	U	4.2	NDR			0.5	U	0.5	18	R	18		
1,2-Dibromo-3-chloropropane	ug/L	0.02		NDR			6.3																

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
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			Sample ID sys_sample_code	B09-4 B09-4-20-1001053-03			B09-4 B09-4-30-1001003-17			B09-4 B09-4-35-1001003-18			B09-5 B09-5-20-1001053-01			B09-5 B09-5-30-1001003-14			B09-5 B09-5-36-1001003-15		
			Sample Date	1/13/2010			1/13/2010			1/13/2010			1/12/2010			1/12/2010			1/12/2010		
			N=NORMAL, FD=FIELD DUPLICATE start_depth	N 16			N 26			N 31			N 16			N 26			N 32		
Parameter	Unit	NJDEP GWQC		Result	Qual	QL	Result	Qual	QL	Result	Qual	QL									
1,2-Dibromoethane	ug/L	0.03		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
1,2-Dichlorobenzene	ug/L	600		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
1,2-Dichloroethane	ug/L	2		NDR	8.6		6.3	9.8		4.2	NDR				0.5	U	0.5	17	J	18	
1,2-Dichloropropane	ug/L	1		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
1,3-Dichlorobenzene	ug/L	600		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
1,4-Dichlorobenzene	ug/L	75		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
1,4-Dioxane	ug/L	NS		NDR	2	U	2	2	U	2	NDR				2	U	2	5.4		2	
2-Butanone	ug/L	300		NDR	63	U	63	42	U	42	NDR				5	U	5	180	R	180	
2-Hexanone	ug/L	NS		NDR	63	U	63	42	U	42	NDR				5	U	5	180	R	180	
4-Methyl-2-pentanone	ug/L	NS		NDR	72		63	120		42	NDR				49		5	71	J	180	
Acetone	ug/L	6000		NDR	63	U	63	42	U	42	NDR				10	U	10	180	U	180	
Benzene	ug/L	1		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
Bromochloromethane	ug/L	NS		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
Bromodichloromethane	ug/L	1		NDR	6.5		6.3	0.37	J	4.2	NDR				7.2		0.5	18	R	18	
Bromoform	ug/L	4		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
Bromomethane	ug/L	10		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
Carbon Disulfide	ug/L	700		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
Carbon Tetrachloride	ug/L	2		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
Chlorobenzene	ug/L	4		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
Chloroethane	ug/L	NS		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
Chloroform	ug/L	6		NDR	9.9		6.3	17		4.2	NDR				9.9		0.5	18	R	18	
Chloromethane	ug/L	NS		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
cis-1,2-Dichloroethene	ug/L	10		NDR	91		6.3	100		4.2	NDR				0.4	J	0.5	440	J	18	
cis-1,3-Dichloropropene	ug/L	NS		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
Cyclohexane	ug/L	NS		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
Dibromochloromethane	ug/L	10		NDR	2.3	J	6.3	4.2	U	4.2	NDR				2.6		0.5	18	R	18	
Dichlorodifluoromethane	ug/L	1000		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
Ethylbenzene	ug/L	700		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
Freon 113	ug/L	NS		NDR	9.9		6.3	6.5		4.2	NDR				1.9		0.5	38	J	18	
Isopropylbenzene	ug/L	700		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
m,p-Xylenes	ug/L	NS		NDR	9		6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
Methyl Acetate	ug/L	7000		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
Methyl Cyclohexane	ug/L	NS		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
Methyl tert-Butyl Ether	ug/L	70		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
Methylene Chloride	ug/L	2		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
o-Xylene	ug/L	NS		NDR	3.7	J	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
Styrene	ug/L	100		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
Tetrachloroethene	ug/L	1		NDR	21		6.3	13		4.2	NDR				3.3		0.5	45	J	18	
Toluene	ug/L	600		NDR	17		6.3	5.5		4.2	NDR				1		0.5	9.1	J	18	
trans-1,2-Dichloroethene	ug/L	100		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
trans-1,3-Dichloropropene	ug/L	NS		NDR	6.3	U	6.3	4.2	U	4.2	NDR				0.5	U	0.5	18	R	18	
Trichloroethene	ug/L	1		NDR	130		6.3	75		4.2	NDR				20		0.5				

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

		Sample ID sys_sample_code	B09-4 B09-4-20-1001053-03	B09-4 B09-4-30-1001003-17	B09-4 B09-4-35-1001003-18	B09-5 B09-5-20-1001053-01	B09-5 B09-5-30-1001003-14	B09-5 B09-5-36-1001003-15
		Sample Date	1/13/2010	1/13/2010	1/13/2010	1/12/2010	1/12/2010	1/12/2010
		N=Normal, FD=Field Duplicate start_depth	N 16	N 26	N 31	N 16	N 26	N 32
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL
Biodegradation Indicator Gases								
Ethane	ug/L	NS	NDR		NDR	NDR	NDR	NDR
Ethene	ug/L	NS	NDR		NDR	NDR	NDR	NDR
Methane	ug/L	NS	NDR		NDR	NDR	NDR	NDR

Notes:

ug/L = micrograms per liter

Qual = validated qualifier

QL = Quantitation Limit

NDR = no data reported

NS = no standard available

Qualifiers:

J - Result or reporting limit is estimated.

U - Result was not detected at or
above the method detection limit.

R - Result was rejected.

* NJDEP GWQC: Higher of the Practical Quantitation Limit
and Ground Water Quality Criterion (N.J.A.C. 7:9C) 07/2010,
as well as Interim Groundwater Quality Criteria.

Inorganic results from MW-21R sampled in December 2009
were unfiltered grab samples collected for Bench Testing
and were not used in the Risk Assessment

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code		MW-11R MW-11R N7/2/2007 13308	MW-13R MW-13R N6/29/2007 13308	MW-13R MW-13R N7/5/2007 13331	MW-14D MW-14D N7/2/2007 13308	MW-14R MW-14R N6/27/2007 13288	MW-16D MW-16D N7/2/2007 13308										
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Inorganics																	
Aluminum	ug/L	200	NDR			NDR			NDR			NDR			NDR		
Antimony	ug/L	6	NDR			NDR			NDR			NDR			NDR		
Arsenic	ug/L	3	NDR			NDR			NDR			NDR			NDR		
Barium	ug/L	6000	NDR			NDR			NDR			NDR			NDR		
Beryllium	ug/L	1	NDR			NDR			NDR			NDR			NDR		
Cadmium	ug/L	4	NDR			NDR			NDR			NDR			NDR		
Calcium	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Chromium	ug/L	70	NDR			NDR			NDR			NDR			NDR		
Cobalt	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Copper	ug/L	1300	NDR			NDR			NDR			NDR			NDR		
Iron	ug/L	300	NDR			NDR			NDR			NDR			NDR		
Lead	ug/L	5	NDR			NDR			NDR			NDR			NDR		
Magnesium	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Manganese	ug/L	50	NDR			NDR			NDR			NDR			NDR		
Mercury	ug/L	2	NDR			NDR			NDR			NDR			NDR		
Nickel	ug/L	100	NDR			NDR			NDR			NDR			NDR		
Potassium	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Selenium	ug/L	40	NDR			NDR			NDR			NDR			NDR		
Silver	ug/L	40	NDR			NDR			NDR			NDR			NDR		
Sodium	ug/L	50000	NDR			NDR			NDR			NDR			NDR		
Thallium	ug/L	2	NDR			NDR			NDR			NDR			NDR		
Vanadium	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Zinc	ug/L	2000	NDR			NDR			NDR			NDR			NDR		
PCBs																	
Aroclor 1016	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1221	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1232	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1242	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1248	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1254	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1260	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1262	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1268	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Pesticides																	
4,4-DDD	ug/L	0.1	NDR			NDR			NDR			NDR			NDR		
4,4-DDE	ug/L	0.1	NDR			NDR			NDR			NDR			NDR		
4,4-DDT	ug/L	0.1	NDR			NDR			NDR			NDR			NDR		
Aldrin	ug/L	0.04	NDR			NDR			NDR			NDR			NDR		
alpha-BHC	ug/L	0.02	NDR			NDR			NDR			NDR			NDR		
alpha-Chlordane	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
alpha-Endosulfan	ug/L	40	NDR			NDR			NDR			NDR			NDR		

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-11R MW-11R N7/2/2007 13308	MW-13R MW-13R N6/29/2007 13308	MW-13R MW-13R N7/5/2007 13331	MW-14D MW-14D N7/2/2007 13308	MW-14R MW-14R N6/27/2007 13288	MW-16D MW-16D N7/2/2007 13308
Sample Date N=Normal, FD=Field Duplicate start_depth			7/2/2007 N	6/29/2007 N	7/5/2007 N	7/2/2007 N	6/27/2007 N	7/2/2007 N
beta-BHC	Parameter	Unit ug/L	NJDEP GWQC 0.04	Result NDR	Qual QL	Result NDR	Qual QL	Result NDR
beta-Endosulfan		ug/L	40	NDR		NDR		NDR
delta-BHC		ug/L	NS	NDR		NDR		NDR
Dieldrin		ug/L	0.03	NDR		NDR		NDR
Endosulfan Sulfate		ug/L	40	NDR		NDR		NDR
Endrin		ug/L	2	NDR		NDR		NDR
Endrin Aldehyde		ug/L	NS	NDR		NDR		NDR
Endrin Ketone		ug/L	NS	NDR		NDR		NDR
gamma-BHC		ug/L	0.03	NDR		NDR		NDR
Heptachlor		ug/L	0.05	NDR		NDR		NDR
Heptachlor Epoxide		ug/L	0.2	NDR		NDR		NDR
Methoxychlor		ug/L	40	NDR		NDR		NDR
Toxaphene		ug/L	2	NDR		NDR		NDR
trans-Chlordane		ug/L	NS	NDR		NDR		NDR
Semivolatile Organic Compounds								
1,2,4,5-Tetrachlorobenzene		ug/L	NS	NDR		NDR		NDR
2,3,4,6-Tetrachlorophenol		ug/L	200	NDR		NDR		NDR
2,4,5-Trichlorophenol		ug/L	700	25 U 25		25 U 25		25 U 25
2,4,6-Trichlorophenol		ug/L	20	10 U 10		10 U 10		10 U 10
2,4-Dichlorophenol		ug/L	20	10 U 10		10 U 10		10 U 10
2,4-Dimethylphenol		ug/L	100	10 U 10		10 U 10		10 U 10
2,4-Dinitrophenol		ug/L	40	25 U 25		25 U 25		25 U 25
2,4-Dinitrotoluene		ug/L	NS	10 U 10		10 U 10		10 U 10
2,6-Dinitrotoluene		ug/L	NS	10 U 10		10 U 10		10 U 10
2-Chloronaphthalene		ug/L	600	10 U 10		10 U 10		10 U 10
2-Chlorophenol		ug/L	40	10 U 10		10 U 10		10 U 10
2-Methylnaphthalene		ug/L	NS	10 U 10		10 U 10		10 U 10
2-Methylphenol		ug/L	NS	10 U 10		10 U 10		10 U 10
2-Nitroaniline		ug/L	NS	25 U 25		25 U 25		25 U 25
2-Nitrophenol		ug/L	NS	10 U 10		10 U 10		10 U 10
3,3'-Dichlorobenzidine		ug/L	30	10 U 10		10 U 10		10 U 10
3-Nitroaniline		ug/L	NS	25 U 25		25 U 25		25 U 25
4,6-Dinitro-2-methylphenol		ug/L	NS	25 U 25		25 U 25		25 U 25
4-Bromophenyl Phenyl Ether		ug/L	NS	10 U 10		10 U 10		10 U 10
4-Chloro-3-methylphenol		ug/L	NS	10 U 10		10 U 10		10 U 10
4-Chloroaniline		ug/L	30	10 U 10		10 U 10		10 U 10
4-Chlorophenyl-phenylether		ug/L	NS	10 U 10		10 U 10		10 U 10
4-Methylphenol		ug/L	NS	10 U 10		10 U 10		10 U 10
4-Nitroaniline		ug/L	NS	25 U 25		25 U 25		25 U 25
4-Nitrophenol		ug/L	NS	25 U 25		25 U 25		25 U 25
Acenaphthene		ug/L	400	10 U 10		10 U 10		10 U 10
Acenaphthylene		ug/L	NS	10 U 10		10 U 10		10 U 10
Acetophenone		ug/L	700	NDR		NDR		NDR
Anthracene		ug/L	2000	10 U 10		10 U 10		10 U 10
Atrazine		ug/L	3	NDR		NDR		NDR

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-11R MW-11R N7/2/2007 13308	MW-13R MW-13R N6/29/2007 13308			MW-13R MW-13R N7/5/2007 13331	MW-14D MW-14D N7/2/2007 13308			MW-14R MW-14R N6/27/2007 13288	MW-16D MW-16D N7/2/2007 13308					
Sample Date N=Normal, FD=Field Duplicate start_depth			7/2/2007 N	6/29/2007 N			7/5/2007 N	7/2/2007 N			6/27/2007 N	7/2/2007 N					
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Benzaldehyde	ug/L	NS	NDR	U	10	NDR	U	10	NDR	U	10	NDR	U	10	NDR	U	10
Benzo[a]anthracene	ug/L	0.1	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Benzo[a]pyrene	ug/L	0.1	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Benzo[b]fluoranthene	ug/L	0.2	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Benzo[g,h,i]perylene	ug/L	NS	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Benzo[k]fluoranthene	ug/L	0.5	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Biphenyl	ug/L	400	NDR			NDR			NDR			NDR			NDR		
Bis(2-chloroethoxy)methane	ug/L	NS	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Bis(2-chloroethyl) Ether	ug/L	7	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Bis(2-chloroisopropyl) Ether	ug/L	300	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Bis(2-ethylhexyl) Phthalate	ug/L	3	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Butylbenzyl Phthalate	ug/L	100	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Caprolactum	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Carbazole	ug/L	NS	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Chrysene	ug/L	5	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Dibenzo[a,h]anthracene	ug/L	0.3	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Dibenzofuran	ug/L	NS	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Diethyl Phthalate	ug/L	6000	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Dimethyl Phthalate	ug/L	NS	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Di-n-Butyl Phthalate	ug/L	700	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Di-n-octyl Phthalate	ug/L	100	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Fluoranthene	ug/L	300	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Fluorene	ug/L	300	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Hexachlorobenzene	ug/L	0.02	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Hexachlorobutadiene	ug/L	1	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Hexachlorocyclopentadiene	ug/L	40	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Hexachloroethane	ug/L	7	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Indeno[1,2,3-cd]pyrene	ug/L	0.2	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Isophorone	ug/L	40	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Naphthalene	ug/L	300	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Nitrobenzene	ug/L	6	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
N-Nitroso-di-n-propylamine	ug/L	10	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
N-Nitrosodiphenylamine	ug/L	10	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Pentachlorophenol	ug/L	0.3	25	U	25	NDR	U	25	25	U	25	25	U	25	25	U	25
Phenanthrene	ug/L	NS	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Phenol	ug/L	2000	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Pyrene	ug/L	200	10	U	10	NDR	U	10	10	U	10	10	U	10	10	U	10
Volatile Organic Compounds																	
1,1,1-Trichloroethane	ug/L	30	0.5	U	0.5	0.66	0.5	NDR	0.5	U	0.5	0.5	U	0.5	2.1	0.5	
1,1,2,2-Tetrachloroethane	ug/L	2	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	
1,1,2-Trichloroethane	ug/L	3	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	
1,1-Dichloroethane	ug/L	70	0.16	J	0.5	5.7	0.5	NDR	1.1	0.5	0.5	0.5	U	0.5	3.1	0.5	
1,1-Dichloroethene	ug/L	2	0.5	U	0.5	24	0.5	NDR	0.74	0.5	0.5	U	0.5	7.4	0.5		
1,2,3-Trichlorobenzene	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
1,2,4-Trichlorobenzene	ug/L	9	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	
1,2-Dibromo-3-chloropropane	ug/L	0.02	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-11R MW-11R N7/2/2007 13308			MW-13R MW-13R N6/29/2007 13308			MW-13R MW-13R N7/5/2007 13331			MW-14D MW-14D N7/2/2007 13308			MW-14R MW-14R N6/27/2007 13288			MW-16D MW-16D N7/2/2007 13308			
Sample Date N=Normal, FD=Field Duplicate start_depth			7/2/2007 N			6/29/2007 N			7/5/2007 N			7/2/2007 N			6/27/2007 N			7/2/2007 N			
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	
1,2-Dibromoethane	ug/L	0.03	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,2-Dichlorobenzene	ug/L	600	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,2-Dichloroethane	ug/L	2	0.89		0.5	9.9		0.5	NDR	0.5	U	0.5	0.5	U	0.5	8.2		0.5			
1,2-Dichloropropane	ug/L	1	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,3-Dichlorobenzene	ug/L	600	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,4-Dichlorobenzene	ug/L	75	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,4-Dioxane	ug/L	NS	2	U	2	0.85	J	2	NDR				NDR			NDR		2	U	2	
2-Butanone	ug/L	300	5	U	5	5.1	J	5	NDR	5	U	5	5	U	5	5	U	5	5	U	5
2-Hexanone	ug/L	NS	5	UJ	5	5	R	5	NDR	5	U	5	5	U	5	5	U	5	5	U	5
4-Methyl-2-pentanone	ug/L	NS	5	UJ	5	5	R	5	NDR	5	U	5	5	U	5	5	U	5	5	U	5
Acetone	ug/L	6000	5	U	5	5	UJ	5	NDR	5	U	5	5	U	5	5	U	5	5	U	5
Benzene	ug/L	1	0.5	U	0.5	1.2		0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Bromochloromethane	ug/L	NS	NDR			NDR			NDR			NDR			NDR			NDR			
Bromodichloromethane	ug/L	1	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Bromoform	ug/L	4	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Bromomethane	ug/L	10	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Carbon Disulfide	ug/L	700	0.5	U	0.5	0.13	J	0.5	NDR	0.5	U	0.5	0.11	J	0.5	0.5	U	0.5	0.5	U	0.5
Carbon Tetrachloride	ug/L	2	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Chlorobenzene	ug/L	4	0.5	U	0.5	1.3		0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.11	J	0.5			
Chloroethane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Chloroform	ug/L	6	0.5	U	0.5	22		0.5	NDR	3.6			0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Chloromethane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
cis-1,2-Dichloroethene	ug/L	10	2.3		0.5	140		0.5	NDR	1.1			0.46	J	0.5	27		0.5			
cis-1,3-Dichloropropene	ug/L	NS	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Cyclohexane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Dibromochloromethane	ug/L	10	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Dichlorodifluoromethane	ug/L	1000	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Ethylbenzene	ug/L	700	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Freon 113	ug/L	NS	0.5	U	0.5	3.7		0.5	NDR	0.5			0.5		0.5	0.5	U	0.5	3.2		
Isopropylbenzene	ug/L	700	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
m,p-Xylenes	ug/L	NS	NDR			NDR			NDR			NDR			NDR			NDR			
Methyl Acetate	ug/L	7000	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Methyl Cyclohexane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Methyl tert-Butyl Ether	ug/L	70	0.5	U	0.5	0.16	J	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Methylene Chloride	ug/L	2	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
o-Xylene	ug/L	NS	NDR			NDR			NDR			NDR			NDR			NDR			
Styrene	ug/L	100	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Tetrachloroethene	ug/L	1	5.6		0.5	29		0.5	NDR	0.12	J	0.5	0.5	U	0.5	9.5		0.5			
Toluene	ug/L	600	0.5	U	0.5	0.5	U	0.5</td													

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-11R MW-11R N7/2/2007 13308	MW-13R MW-13R N6/29/2007 13308	MW-13R MW-13R N7/5/2007 13331	MW-14D MW-14D N7/2/2007 13308	MW-14R MW-14R N6/27/2007 13288	MW-16D MW-16D N7/2/2007 13308						
Sample Date			7/2/2007	6/29/2007	7/5/2007	7/2/2007	6/27/2007	7/2/2007						
N=Normal, FD=Field Duplicate start_depth			N	N	N	N	N	N						
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL						
Biodegradation Indicator Gases														
Ethane	ug/L	NS	0.14	0.025	17	0.025	NDR	0.055	0.025	0.029	0.025	0.019	J	0.025
Ethene	ug/L	NS	0.14	0.025	2.1	0.025	NDR	0.22	0.025	0.021	J	0.025	0.081	0.025
Methane	ug/L	NS	400	0.1	1200	0.1	NDR	11	0.1	20	0.1	82		0.1

Notes:

ug/L = micrograms per liter

Qual = validated qualifier

QL = Quantitation Limit

NDR = no data reported

NS = no standard available

Qualifiers:

J - Result or reporting limit is estimated.

U - Result was not detected at or

above the method detection limit.

R - Result was rejected.

* NJDEP GWQC: Higher of the Practical Quantitation Limit

and Ground Water Quality Criterion (N.J.A.C. 7:9C) 07/2010,

as well as Interim Groundwater Quality Criteria.

Inorganic results from MW-21R sampled in December 2009

were unfiltered grab samples collected for Bench Testing

and were not used in the Risk Assessment

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-17D MW-17D N6/27/2007 13288	MW-18D MW-18D N6/27/2007 13288	MW-18D MW-18D-0912109-13	MW-19D MW-19D N12/21/2006 11938	MW-19D MW-19D N6/26/2007 13288	MW-19R MW-19R N12/21/2006 11938									
Sample Date N=Normal, FD=Field Duplicate start_depth			6/27/2007 N	6/27/2007 N	12/17/2009 N	12/21/2006 N	6/26/2007 N	12/21/2006 N									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Inorganics																	
Aluminum	ug/L	200	NDR			NDR			NDR			NDR			NDR		
Antimony	ug/L	6	NDR			NDR			NDR			NDR			NDR		
Arsenic	ug/L	3	NDR			NDR			NDR			NDR			NDR		
Barium	ug/L	6000	NDR			NDR			NDR			NDR			NDR		
Beryllium	ug/L	1	NDR			NDR			NDR			NDR			NDR		
Cadmium	ug/L	4	NDR			NDR			NDR			NDR			NDR		
Calcium	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Chromium	ug/L	70	NDR			NDR			NDR			NDR			NDR		
Cobalt	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Copper	ug/L	1300	NDR			NDR			NDR			NDR			NDR		
Iron	ug/L	300	NDR			NDR			NDR			NDR			NDR		
Lead	ug/L	5	NDR			NDR			NDR			NDR			NDR		
Magnesium	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Manganese	ug/L	50	NDR			NDR			NDR			NDR			NDR		
Mercury	ug/L	2	NDR			NDR			NDR			NDR			NDR		
Nickel	ug/L	100	NDR			NDR			NDR			NDR			NDR		
Potassium	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Selenium	ug/L	40	NDR			NDR			NDR			NDR			NDR		
Silver	ug/L	40	NDR			NDR			NDR			NDR			NDR		
Sodium	ug/L	50000	NDR			NDR			NDR			NDR			NDR		
Thallium	ug/L	2	NDR			NDR			NDR			NDR			NDR		
Vanadium	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Zinc	ug/L	2000	NDR			NDR			NDR			NDR			NDR		
PCBs																	
Aroclor 1016	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1221	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1232	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1242	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1248	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1254	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1260	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1262	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1268	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Pesticides																	
4,4-DDD	ug/L	0.1	NDR			NDR			NDR			NDR			NDR		
4,4-DDE	ug/L	0.1	NDR			NDR			NDR			NDR			NDR		
4,4-DDT	ug/L	0.1	NDR			NDR			NDR			NDR			NDR		
Aldrin	ug/L	0.04	NDR			NDR			NDR			NDR			NDR		
alpha-BHC	ug/L	0.02	NDR			NDR			NDR			NDR			NDR		
alpha-Chlordane	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
alpha-Endosulfan	ug/L	40	NDR			NDR			NDR			NDR			NDR		

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-17D MW-17D N6/27/2007 13288	MW-18D MW-18D N6/27/2007 13288	MW-18D MW-18D-0912109-13	MW-19D MW-19D N12/21/2006 11938	MW-19D MW-19D N6/26/2007 13288	MW-19R MW-19R N12/21/2006 11938									
Sample Date N=Normal, FD=Field Duplicate start_depth			6/27/2007 N	6/27/2007 N	12/17/2009 N	12/21/2006 N	6/26/2007 N	12/21/2006 N									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
beta-BHC	ug/L	0.04	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
beta-Endosulfan	ug/L	40	NDR			NDR			NDR			NDR			NDR		
delta-BHC	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Dieldrin	ug/L	0.03	NDR			NDR			NDR			NDR			NDR		
Endosulfan Sulfate	ug/L	40	NDR			NDR			NDR			NDR			NDR		
Endrin	ug/L	2	NDR			NDR			NDR			NDR			NDR		
Endrin Aldehyde	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Endrin Ketone	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
gamma-BHC	ug/L	0.03	NDR			NDR			NDR			NDR			NDR		
Heptachlor	ug/L	0.05	NDR			NDR			NDR			NDR			NDR		
Heptachlor Epoxide	ug/L	0.2	NDR			NDR			NDR			NDR			NDR		
Methoxychlor	ug/L	40	NDR			NDR			NDR			NDR			NDR		
Toxaphene	ug/L	2	NDR			NDR			NDR			NDR			NDR		
trans-Chlordane	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Semivolatile Organic Compounds																	
1,2,4,5-Tetrachlorobenzene	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
2,3,4,6-Tetrachlorophenol	ug/L	200	NDR			NDR			NDR			NDR			NDR		
2,4,5-Trichlorophenol	ug/L	700	25	U	25	25	U	25	NDR			NDR			25	U	25
2,4,6-Trichlorophenol	ug/L	20	10	U	10	10	U	10	NDR			NDR			10	U	10
2,4-Dichlorophenol	ug/L	20	10	U	10	10	U	10	NDR			NDR			10	U	10
2,4-Dimethylphenol	ug/L	100	10	U	10	10	U	10	NDR			NDR			10	U	10
2,4-Dinitrophenol	ug/L	40	25	U	25	25	U	25	NDR			NDR			25	U	25
2,4-Dinitrotoluene	ug/L	NS	10	U	10	10	U	10	NDR			NDR			10	U	10
2,6-Dinitrotoluene	ug/L	NS	10	U	10	10	U	10	NDR			NDR			10	U	10
2-Chloronaphthalene	ug/L	600	10	U	10	10	U	10	NDR			NDR			10	U	10
2-Chlorophenol	ug/L	40	10	U	10	10	U	10	NDR			NDR			10	U	10
2-Methylnaphthalene	ug/L	NS	10	U	10	10	U	10	NDR			NDR			10	U	10
2-Methylphenol	ug/L	NS	10	U	10	10	U	10	NDR			NDR			10	U	10
2-Nitroaniline	ug/L	NS	25	U	25	25	U	25	NDR			NDR			25	U	25
2-Nitrophenol	ug/L	NS	10	U	10	10	U	10	NDR			NDR			10	U	10
3,3'-Dichlorobenzidine	ug/L	30	10	U	10	10	U	10	NDR			NDR			10	U	10
3-Nitroaniline	ug/L	NS	25	U	25	25	U	25	NDR			NDR			25	U	25
4,6-Dinitro-2-methylphenol	ug/L	NS	25	U	25	25	U	25	NDR			NDR			25	U	25
4-Bromophenyl Phenyl Ether	ug/L	NS	10	U	10	10	U	10	NDR			NDR			10	U	10
4-Chloro-3-methylphenol	ug/L	NS	10	U	10	10	U	10	NDR			NDR			10	U	10
4-Chloroaniline	ug/L	30	10	U	10	10	U	10	NDR			NDR			10	U	10
4-Chlorophenyl-phenylether	ug/L	NS	10	U	10	10	U	10	NDR			NDR			10	U	10
4-Methylphenol	ug/L	NS	10	U	10	10	U	10	NDR			NDR			10	U	10
4-Nitroaniline	ug/L	NS	25	U	25	25	U	25	NDR			NDR			25	U	25
4-Nitrophenol	ug/L	NS	25	U	25	25	U	25	NDR			NDR			25	U	25
Acenaphthene	ug/L	400	10	U	10	10	U	10	NDR			NDR			10	U	10
Acenaphthylene	ug/L	NS	10	U	10	10	U	10	NDR			NDR			10	U	10
Acetophenone	ug/L	700	NDR			NDR			NDR			NDR			NDR		
Anthracene	ug/L	2000	10	U	10	10	U	10	NDR			NDR			10	U	10
Atrazine	ug/L	3	NDR			NDR			NDR			NDR			NDR		

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-17D MW-17D N6/27/2007 13288	MW-18D MW-18D N6/27/2007 13288	MW-18D MW-18D-0912109-13	MW-19D MW-19D N12/21/2006 11938	MW-19D MW-19D N6/26/2007 13288	MW-19R MW-19R N12/21/2006 11938									
Sample Date N=Normal, FD=Field Duplicate start_depth			6/27/2007 N	6/27/2007 N	12/17/2009 N	12/21/2006 N	6/26/2007 N	12/21/2006 N									
Parameter	Unit ug/L	NJDEP GWQC NS	Result NDR	Qual U	QL 10	Result NDR	Qual U	QL 10	Result NDR	Qual U	QL 10	Result NDR	Qual U	QL 10	Result NDR	Qual U	QL 10
Benzaldehyde																	
Benzo[a]anthracene	ug/L	0.1	10	U	10	10	U	10	NDR			10	U	10	NDR		
Benzo[a]pyrene	ug/L	0.1	10	U	10	10	U	10	NDR			10	U	10	NDR		
Benzo[b]fluoranthene	ug/L	0.2	10	U	10	10	U	10	NDR			10	U	10	NDR		
Benzo[g,h,i]perylene	ug/L	NS	10	U	10	10	U	10	NDR			10	U	10	NDR		
Benzo[k]fluoranthene	ug/L	0.5	10	U	10	10	U	10	NDR			10	U	10	NDR		
Biphenyl	ug/L	400	NDR			NDR			NDR			NDR			NDR		
Bis(2-chloroethoxy)methane	ug/L	NS	10	U	10	10	U	10	NDR			10	U	10	NDR		
Bis(2-chloroethyl) Ether	ug/L	7	10	U	10	10	U	10	NDR			10	U	10	NDR		
Bis(2-chloroisopropyl) Ether	ug/L	300	10	U	10	10	U	10	NDR			10	U	10	NDR		
Bis(2-ethylhexyl) Phthalate	ug/L	3	10	U	10	10	U	10	NDR			10	U	10	NDR		
Butylbenzyl Phthalate	ug/L	100	10	U	10	10	U	10	NDR			10	U	10	NDR		
Caprolactum	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Carbazole	ug/L	NS	10	U	10	10	U	10	NDR			10	U	10	NDR		
Chrysene	ug/L	5	10	U	10	10	U	10	NDR			10	U	10	NDR		
Dibenzo[a,h]anthracene	ug/L	0.3	10	U	10	10	U	10	NDR			10	U	10	NDR		
Dibenzofuran	ug/L	NS	10	U	10	10	U	10	NDR			10	U	10	NDR		
Diethyl Phthalate	ug/L	6000	10	U	10	10	U	10	NDR			10	U	10	NDR		
Dimethyl Phthalate	ug/L	NS	10	U	10	10	U	10	NDR			10	U	10	NDR		
Di-n-Butyl Phthalate	ug/L	700	10	U	10	10	U	10	NDR			10	U	10	NDR		
Di-n-octyl Phthalate	ug/L	100	10	U	10	10	U	10	NDR			10	U	10	NDR		
Fluoranthene	ug/L	300	10	U	10	10	U	10	NDR			10	U	10	NDR		
Fluorene	ug/L	300	10	U	10	10	U	10	NDR			10	U	10	NDR		
Hexachlorobenzene	ug/L	0.02	10	U	10	10	U	10	NDR			10	U	10	NDR		
Hexachlorobutadiene	ug/L	1	10	U	10	10	U	10	NDR			10	U	10	NDR		
Hexachlorocyclopentadiene	ug/L	40	10	U	10	10	U	10	NDR			10	U	10	NDR		
Hexachloroethane	ug/L	7	10	U	10	10	U	10	NDR			10	U	10	NDR		
Indeno[1,2,3-cd]pyrene	ug/L	0.2	10	U	10	10	U	10	NDR			10	U	10	NDR		
Isophorone	ug/L	40	10	U	10	10	U	10	NDR			10	U	10	NDR		
Naphthalene	ug/L	300	10	U	10	10	U	10	NDR			10	U	10	NDR		
Nitrobenzene	ug/L	6	10	U	10	10	U	10	NDR			10	U	10	NDR		
N-Nitroso-di-n-propylamine	ug/L	10	10	U	10	10	U	10	NDR			10	U	10	NDR		
N-Nitrosodiphenylamine	ug/L	10	10	U	10	10	U	10	NDR			10	U	10	NDR		
Pentachlorophenol	ug/L	0.3	25	U	25	25	U	25	NDR			25	U	25	NDR		
Phenanthrene	ug/L	NS	10	U	10	10	U	10	NDR			10	U	10	NDR		
Phenol	ug/L	2000	10	U	10	10	U	10	NDR			10	U	10	NDR		
Pyrene	ug/L	200	10	U	10	10	U	10	NDR			10	U	10	NDR		
Volatile Organic Compounds																	
1,1,1-Trichloroethane	ug/L	30	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5
1,1,2,2-Tetrachloroethane	ug/L	2	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5
1,1,2-Trichloroethane	ug/L	3	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5
1,1-Dichloroethane	ug/L	70	0.79	0.5	0.85	0.5	0.67	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5
1,1-Dichloroethene	ug/L	2	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5
1,2,3-Trichlorobenzene	ug/L	NS	NDR			NDR			0.5	U	0.5	NDR			NDR		
1,2,4-Trichlorobenzene	ug/L	9	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5
1,2-Dibromo-3-chloropropane	ug/L	0.02	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-17D MW-17D N6/27/2007 13288	MW-18D MW-18D N6/27/2007 13288	MW-18D MW-18D-0912109-13	MW-19D MW-19D N12/21/2006 11938	MW-19D MW-19D N6/26/2007 13288	MW-19R MW-19R N12/21/2006 11938										
Sample Date N=Normal, FD=Field Duplicate start_depth			6/27/2007 N	6/27/2007 N	12/17/2009 N	12/21/2006 N	6/26/2007 N	12/21/2006 N										
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	
1,2-Dibromoethane	ug/L	0.03	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
1,2-Dichlorobenzene	ug/L	600	0.13	J	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
1,2-Dichloroethane	ug/L	2	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
1,2-Dichloropropane	ug/L	1	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
1,3-Dichlorobenzene	ug/L	600	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
1,4-Dichlorobenzene	ug/L	75	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
1,4-Dioxane	ug/L	NS	5.3		2	NDR			46		2	2	U	2	NDR		4	2
2-Butanone	ug/L	300	5	U	5	5	U	5	5	U	5	10	U	10	5	U	5	
2-Hexanone	ug/L	NS	5	U	5	5	U	5	5	U	5	10	U	10	5	U	5	
4-Methyl-2-pentanone	ug/L	NS	5	U	5	5	U	5	5	U	5	10	U	10	5	U	5	
Acetone	ug/L	6000	5	U	5	5	U	5	5	U	5	5	J	10	5	U	5	
Benzene	ug/L	1	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Bromochloromethane	ug/L	NS	NDR			NDR			0.5	U	0.5	NDR			NDR		NDR	
Bromodichloromethane	ug/L	1	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Bromoform	ug/L	4	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Bromomethane	ug/L	10	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Carbon Disulfide	ug/L	700	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Carbon Tetrachloride	ug/L	2	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Chlorobenzene	ug/L	4	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Chloroethane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Chloroform	ug/L	6	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Chloromethane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
cis-1,2-Dichloroethene	ug/L	10	2.2	J	0.5	0.92	J	0.5	0.85		0.5	10	U	10	0.11	J	0.5	
cis-1,3-Dichloropropene	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Cyclohexane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Dibromochloromethane	ug/L	10	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Dichlorodifluoromethane	ug/L	1000	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Ethylbenzene	ug/L	700	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Freon 113	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Isopropylbenzene	ug/L	700	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
m,p-Xylenes	ug/L	NS	NDR			NDR			0.5	U	0.5	NDR			NDR		NDR	
Methyl Acetate	ug/L	7000	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Methyl Cyclohexane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Methyl tert-Butyl Ether	ug/L	70	10		0.5	10		0.5	7.8		0.5	10	U	10	0.5	U	0.5	
Methylene Chloride	ug/L	2	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
o-Xylene	ug/L	NS	NDR			NDR			0.5	U	0.5	NDR			NDR		NDR	
Styrene	ug/L	100	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Tetrachloroethene	ug/L	1	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Toluene	ug/L	600	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
trans-1,2-Dichloroethene	ug/L	100	0.5	UJ	0.5	0.5	UJ	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
trans-1,3-Dichloropropene	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Trichloroethene	ug/L	1	0.29	J	0.5	0.24	J	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Trichlorofluoromethane	ug/L	2000	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Vinyl Chloride	ug/L	5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	10	U	10	0.5	U	0.5	
Xylenes, Total	ug/L	40	0.5	U	0.5	0.5	U	0.5	NDR			10	U	10	0.5	U	0.5	

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-17D MW-17D N6/27/2007 13288	MW-18D MW-18D N6/27/2007 13288	MW-18D MW-18D-0912109-13	MW-19D MW-19D N12/21/2006 11938	MW-19D MW-19D N6/26/2007 13288	MW-19R MW-19R N12/21/2006 11938									
Sample Date N=Normal, FD=Field Duplicate start_depth			6/27/2007 N	6/27/2007 N	12/17/2009 N	12/21/2006 N	6/26/2007 N	12/21/2006 N									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Biodegradation Indicator Gases																	
Ethane	ug/L	NS	0.27	0.025	0.36	0.025	NDR	NDR	0.022	J	0.025	NDR					
Ethene	ug/L	NS	0.024	J	0.025	0.021	J	0.025	NDR	NDR	0.017	J	0.025	NDR			
Methane	ug/L	NS	19	0.1	15	0.1	NDR	NDR	0.61		0.1	NDR					

Notes:

ug/L = micrograms per liter

Qual = validated qualifier

QL = Quantitation Limit

NDR = no data reported

NS = no standard available

Qualifiers:

J - Result or reporting limit is estimated.

U - Result was not detected at or
above the method detection limit.

R - Result was rejected.

* NJDEP GWQC: Higher of the Practical Quantitation Limit
and Ground Water Quality Criterion (N.J.A.C. 7:9C) 07/2010,
as well as Interim Groundwater Quality Criteria.

Inorganic results from MW-21R sampled in December 2009
were unfiltered grab samples collected for Bench Testing
and were not used in the Risk Assessment

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-19R MW-19R N6/26/2007 13288	MW-20D MW-20D DUP N12/21/2006 11938	MW-20D MW-20D N12/21/2006 11938	MW-20D MW-20D N6/27/2007 13288	MW-20R MW-20R N12/21/2006 11938	MW-20R MW-20R N6/27/2007 13288									
Sample Date N=Normal, FD=Field Duplicate start_depth			6/26/2007 N	12/21/2006 FD	12/21/2006 N	6/27/2007 N	12/21/2006 N	6/27/2007 N									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Inorganics																	
Aluminum	ug/L	200	NDR			NDR			NDR			NDR			NDR		
Antimony	ug/L	6	NDR			NDR			NDR			NDR			NDR		
Arsenic	ug/L	3	NDR			NDR			NDR			NDR			NDR		
Barium	ug/L	6000	NDR			NDR			NDR			NDR			NDR		
Beryllium	ug/L	1	NDR			NDR			NDR			NDR			NDR		
Cadmium	ug/L	4	NDR			NDR			NDR			NDR			NDR		
Calcium	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Chromium	ug/L	70	NDR			NDR			NDR			NDR			NDR		
Cobalt	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Copper	ug/L	1300	NDR			NDR			NDR			NDR			NDR		
Iron	ug/L	300	NDR			NDR			NDR			NDR			NDR		
Lead	ug/L	5	NDR			NDR			NDR			NDR			NDR		
Magnesium	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Manganese	ug/L	50	NDR			NDR			NDR			NDR			NDR		
Mercury	ug/L	2	NDR			NDR			NDR			NDR			NDR		
Nickel	ug/L	100	NDR			NDR			NDR			NDR			NDR		
Potassium	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Selenium	ug/L	40	NDR			NDR			NDR			NDR			NDR		
Silver	ug/L	40	NDR			NDR			NDR			NDR			NDR		
Sodium	ug/L	50000	NDR			NDR			NDR			NDR			NDR		
Thallium	ug/L	2	NDR			NDR			NDR			NDR			NDR		
Vanadium	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Zinc	ug/L	2000	NDR			NDR			NDR			NDR			NDR		
PCBs																	
Aroclor 1016	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1221	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1232	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1242	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1248	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1254	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1260	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1262	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1268	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Pesticides																	
4,4-DDD	ug/L	0.1	NDR			NDR			NDR			NDR			NDR		
4,4-DDE	ug/L	0.1	NDR			NDR			NDR			NDR			NDR		
4,4-DDT	ug/L	0.1	NDR			NDR			NDR			NDR			NDR		
Aldrin	ug/L	0.04	NDR			NDR			NDR			NDR			NDR		
alpha-BHC	ug/L	0.02	NDR			NDR			NDR			NDR			NDR		
alpha-Chlordane	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
alpha-Endosulfan	ug/L	40	NDR			NDR			NDR			NDR			NDR		

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-19R MW-19R N6/26/2007 13288	MW-20D MW-20D DUP N12/21/2006 11938	MW-20D MW-20D N12/21/2006 11938	MW-20D MW-20D N6/27/2007 13288	MW-20R MW-20R N12/21/2006 11938	MW-20R MW-20R N6/27/2007 13288						
Sample Date N=Normal, FD=Field Duplicate start_depth			6/26/2007 N	12/21/2006 FD	12/21/2006 N	6/27/2007 N	12/21/2006 N	6/27/2007 N						
Parameter	Unit ug/L	NJDEP GWQC 0.04	Result NDR	Qual NDR	QL	Result NDR	Qual NDR	QL	Result NDR	Qual NDR	QL	Result NDR	Qual NDR	QL
beta-BHC														
beta-Endosulfan	ug/L	40	NDR			NDR			NDR			NDR		
delta-BHC	ug/L	NS	NDR			NDR			NDR			NDR		
Dieldrin	ug/L	0.03	NDR			NDR			NDR			NDR		
Endosulfan Sulfate	ug/L	40	NDR			NDR			NDR			NDR		
Endrin	ug/L	2	NDR			NDR			NDR			NDR		
Endrin Aldehyde	ug/L	NS	NDR			NDR			NDR			NDR		
Endrin Ketone	ug/L	NS	NDR			NDR			NDR			NDR		
gamma-BHC	ug/L	0.03	NDR			NDR			NDR			NDR		
Heptachlor	ug/L	0.05	NDR			NDR			NDR			NDR		
Heptachlor Epoxide	ug/L	0.2	NDR			NDR			NDR			NDR		
Methoxychlor	ug/L	40	NDR			NDR			NDR			NDR		
Toxaphene	ug/L	2	NDR			NDR			NDR			NDR		
trans-Chlordane	ug/L	NS	NDR			NDR			NDR			NDR		
Semivolatile Organic Compounds														
1,2,4,5-Tetrachlorobenzene	ug/L	NS	NDR			NDR			NDR			NDR		
2,3,4,6-Tetrachlorophenol	ug/L	200	NDR			NDR			NDR			NDR		
2,4,5-Trichlorophenol	ug/L	700	25	U	25	NDR			25	U	25	NDR		
2,4,6-Trichlorophenol	ug/L	20	10	U	10	NDR			10	U	10	NDR		
2,4-Dichlorophenol	ug/L	20	10	U	10	NDR			10	U	10	NDR		
2,4-Dimethylphenol	ug/L	100	10	U	10	NDR			10	U	10	NDR		
2,4-Dinitrophenol	ug/L	40	25	U	25	NDR			25	U	25	NDR		
2,4-Dinitrotoluene	ug/L	NS	10	U	10	NDR			10	U	10	NDR		
2,6-Dinitrotoluene	ug/L	NS	10	U	10	NDR			10	U	10	NDR		
2-Chloronaphthalene	ug/L	600	10	U	10	NDR			10	U	10	NDR		
2-Chlorophenol	ug/L	40	10	U	10	NDR			10	U	10	NDR		
2-Methylnaphthalene	ug/L	NS	10	U	10	NDR			10	U	10	NDR		
2-Methylphenol	ug/L	NS	10	U	10	NDR			10	U	10	NDR		
2-Nitroaniline	ug/L	NS	25	U	25	NDR			25	U	25	NDR		
2-Nitrophenol	ug/L	NS	10	U	10	NDR			10	U	10	NDR		
3,3'-Dichlorobenzidine	ug/L	30	10	U	10	NDR			10	U	10	NDR		
3-Nitroaniline	ug/L	NS	25	U	25	NDR			25	U	25	NDR		
4,6-Dinitro-2-methylphenol	ug/L	NS	25	U	25	NDR			25	U	25	NDR		
4-Bromophenyl Phenyl Ether	ug/L	NS	10	U	10	NDR			10	U	10	NDR		
4-Chloro-3-methylphenol	ug/L	NS	10	U	10	NDR			10	U	10	NDR		
4-Chloroaniline	ug/L	30	10	U	10	NDR			10	U	10	NDR		
4-Chlorophenyl-phenylether	ug/L	NS	10	U	10	NDR			10	U	10	NDR		
4-Methylphenol	ug/L	NS	10	U	10	NDR			10	U	10	NDR		
4-Nitroaniline	ug/L	NS	25	U	25	NDR			25	U	25	NDR		
4-Nitrophenol	ug/L	NS	25	U	25	NDR			25	U	25	NDR		
Acenaphthene	ug/L	400	10	U	10	NDR			10	U	10	NDR		
Acenaphthylene	ug/L	NS	10	U	10	NDR			10	U	10	NDR		
Acetophenone	ug/L	700	NDR			NDR			NDR			NDR		
Anthracene	ug/L	2000	10	U	10	NDR			10	U	10	NDR		
Atrazine	ug/L	3	NDR			NDR			NDR			NDR		

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Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-19R MW-19R N6/26/2007 13288	MW-20D MW-20D DUP N12/21/2006 11938	MW-20D MW-20D N12/21/2006 11938	MW-20D MW-20D N6/27/2007 13288	MW-20R MW-20R N12/21/2006 11938	MW-20R MW-20R N6/27/2007 13288												
Sample Date N=Normal, FD=Field Duplicate start_depth			6/26/2007 N	12/21/2006 FD	12/21/2006 N	6/27/2007 N	12/21/2006 N	6/27/2007 N												
Parameter	Unit ug/L	NJDEP GWQC NS	Result NDR	Qual U	QL 10	Result NDR	Qual U	QL 10	Result NDR	Qual U	QL 10	Result NDR	Qual U	QL 10	Result NDR	Qual U	QL 10			
Benzaldehyde																				
Benzo[a]anthracene	ug/L	0.1	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Benzo[a]pyrene	ug/L	0.1	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Benzo[b]fluoranthene	ug/L	0.2	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Benzo[g,h,i]perylene	ug/L	NS	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Benzo[k]fluoranthene	ug/L	0.5	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Biphenyl	ug/L	400	NDR			NDR			NDR				NDR							
Bis(2-chloroethoxy)methane	ug/L	NS	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Bis(2-chloroethyl) Ether	ug/L	7	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Bis(2-chloroisopropyl) Ether	ug/L	300	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Bis(2-ethylhexyl) Phthalate	ug/L	3	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Butylbenzyl Phthalate	ug/L	100	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Caprolactum	ug/L	NS	NDR			NDR			NDR				NDR							
Carbazole	ug/L	NS	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Chrysene	ug/L	5	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Dibenzo[a,h]anthracene	ug/L	0.3	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Dibenzofuran	ug/L	NS	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Diethyl Phthalate	ug/L	6000	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Dimethyl Phthalate	ug/L	NS	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Di-n-Butyl Phthalate	ug/L	700	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Di-n-octyl Phthalate	ug/L	100	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Fluoranthene	ug/L	300	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Fluorene	ug/L	300	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Hexachlorobenzene	ug/L	0.02	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Hexachlorobutadiene	ug/L	1	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Hexachlorocyclopentadiene	ug/L	40	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Hexachloroethane	ug/L	7	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Indeno[1,2,3-cd]pyrene	ug/L	0.2	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Isophorone	ug/L	40	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Naphthalene	ug/L	300	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Nitrobenzene	ug/L	6	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
N-Nitroso-di-n-propylamine	ug/L	10	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
N-Nitrosodiphenylamine	ug/L	10	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Pentachlorophenol	ug/L	0.3	25	U	25	NDR			NDR	25	U	25	NDR			25	U	25		
Phenanthrene	ug/L	NS	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Phenol	ug/L	2000	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Pyrene	ug/L	200	10	U	10	NDR			NDR	10	U	10	NDR			10	U	10		
Volatile Organic Compounds																				
1,1,1-Trichloroethane	ug/L	30	0.5	U	0.5	50	U	50	50	U	50	1.8	0.5	10	U	10	0.5	U	0.5	
1,1,2,2-Tetrachloroethane	ug/L	2	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10	0.5	U	0.5
1,1,2-Trichloroethane	ug/L	3	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10	0.5	U	0.5
1,1-Dichloroethane	ug/L	70	0.19	J	0.5	13	J	50	13	J	50	13	0.5	10	U	10	0.5	U	0.5	
1,1-Dichloroethene	ug/L	2	0.5	U	0.5	20	J	50	20	J	50	24	0.5	10	U	10	0.5	U	0.5	
1,2,3-Trichlorobenzene	ug/L	NS	NDR			NDR			NDR			NDR			NDR			NDR		
1,2,4-Trichlorobenzene	ug/L	9	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10	0.5	U	0.5
1,2-Dibromo-3-chloropropane	ug/L	0.02	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10	0.5	U	0.5

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-19R MW-19R N6/26/2007 13288	MW-20D MW-20D DUP N12/21/2006 11938	MW-20D MW-20D N12/21/2006 11938	MW-20D MW-20D N6/27/2007 13288	MW-20R MW-20R N12/21/2006 11938	MW-20R MW-20R N6/27/2007 13288									
Sample Date N=Normal, FD=Field Duplicate start_depth			6/26/2007 N	12/21/2006 FD	12/21/2006 N	6/27/2007 N	12/21/2006 N	6/27/2007 N									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
1,2-Dibromoethane	ug/L	0.03	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
1,2-Dichlorobenzene	ug/L	600	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
1,2-Dichloroethane	ug/L	2	0.5	U	0.5	20	J	50	20	J	50	19	0.5	10	U	10	0.5
1,2-Dichloropropane	ug/L	1	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
1,3-Dichlorobenzene	ug/L	600	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
1,4-Dichlorobenzene	ug/L	75	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
1,4-Dioxane	ug/L	NS	NDR			5.7		2	6.3		2	NDR		2	U	2	NDR
2-Butanone	ug/L	300	5	U	5	50	U	50	50	U	50	5	U	5	10	U	10
2-Hexanone	ug/L	NS	5	U	5	50	U	50	50	U	50	5	UJ	5	10	U	10
4-Methyl-2-pentanone	ug/L	NS	5	U	5	50	U	50	50	U	50	5	UJ	5	10	U	10
Acetone	ug/L	6000	5	U	5	20	J	50	50	U	50	5	U	5	10	U	10
Benzene	ug/L	1	0.5	U	0.5	50	U	50	50	U	50	3.7	0.5	10	U	10	0.5
Bromochloromethane	ug/L	NS	NDR			NDR			NDR			NDR		NDR		NDR	
Bromodichloromethane	ug/L	1	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
Bromoform	ug/L	4	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
Bromomethane	ug/L	10	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
Carbon Disulfide	ug/L	700	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
Carbon Tetrachloride	ug/L	2	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
Chlorobenzene	ug/L	4	0.5	U	0.5	50	U	50	50	U	50	0.9	0.5	10	U	10	0.5
Chloroethane	ug/L	NS	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
Chloroform	ug/L	6	0.5	U	0.5	19	J	50	19	J	50	14	0.5	10	U	10	0.5
Chloromethane	ug/L	NS	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
cis-1,2-Dichloroethene	ug/L	10	2	0.5	350			50	340		50	370	0.5	10	U	10	0.23
cis-1,3-Dichloropropene	ug/L	NS	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
Cyclohexane	ug/L	NS	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
Dibromochloromethane	ug/L	10	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
Dichlorodifluoromethane	ug/L	1000	0.5	U	0.5	50	U	50	50	U	50	0.77	0.5	10	U	10	0.5
Ethylbenzene	ug/L	700	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
Freon 113	ug/L	NS	0.23	J	0.5	50	U	50	50	U	50	5.8	0.5	10	U	10	0.5
Isopropylbenzene	ug/L	700	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
m,p-Xylenes	ug/L	NS	NDR			NDR			NDR			NDR		NDR		NDR	
Methyl Acetate	ug/L	7000	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
Methyl Cyclohexane	ug/L	NS	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
Methyl tert-Butyl Ether	ug/L	70	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
Methylene Chloride	ug/L	2	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
o-Xylene	ug/L	NS	NDR			NDR			NDR			NDR		NDR		NDR	
Styrene	ug/L	100	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
Tetrachloroethene	ug/L	1	1.2	0.5	25	J	50		26	J	50	22	0.5	10	U	10	0.5
Toluene	ug/L	600	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
trans-1,2-Dichloroethene	ug/L	100	0.5	U	0.5	50	U	50	50	U	50	1.2	J	0.5	10	U	10
trans-1,3-Dichloropropene	ug/L	NS	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
Trichloroethene	ug/L	1	5.7	0.5	200			50	200		50	210	0.5	10	U	10	0.56
Trichlorofluoromethane	ug/L	2000	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10
Vinyl Chloride	ug/L	5	0.5	U	0.5	29	J	50	29	J	50	32	0.5	10	U	10	0.5
Xylenes, Total	ug/L	40	0.5	U	0.5	50	U	50	50	U	50	0.5	U	0.5	10	U	10

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-19R MW-19R N6/26/2007 13288	MW-20D MW-20D DUP N12/21/2006 11938	MW-20D MW-20D N12/21/2006 11938	MW-20D MW-20D N6/27/2007 13288	MW-20R MW-20R N12/21/2006 11938	MW-20R MW-20R N6/27/2007 13288									
Sample Date N=Normal, FD=Field Duplicate start_depth			6/26/2007 N	12/21/2006 FD	12/21/2006 N	6/27/2007 N	12/21/2006 N	6/27/2007 N									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Biodegradation Indicator Gases																	
Ethane	ug/L	NS	0.24	0.025	NDR	NDR	0.78	0.025	NDR	0.013	J	0.025					
Ethene	ug/L	NS	0.24	0.025	NDR	NDR	9.8	0.025	NDR	0.017	J	0.025					
Methane	ug/L	NS	7.2	0.1	NDR	NDR	50	0.1	NDR	3.5		0.1					

Notes:

ug/L = micrograms per liter

Qual = validated qualifier

QL = Quantitation Limit

NDR = no data reported

NS = no standard available

Qualifiers:

J - Result or reporting limit is estimated.

U - Result was not detected at or
above the method detection limit.

R - Result was rejected.

* NJDEP GWQC: Higher of the Practical Quantitation Limit
and Ground Water Quality Criterion (N.J.A.C. 7:9C) 07/2010,
as well as Interim Groundwater Quality Criteria.

Inorganic results from MW-21R sampled in December 2009
were unfiltered grab samples collected for Bench Testing
and were not used in the Risk Assessment

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-21D MW-21D 14006	MW-21D MW-21D N6/28/2007 13308	MW-21R FDMW-21R-28-0912109-11	MW-21R MW-21R-05/06/2010	MW-21R MW-21R-28-0912109-10	MW-21R MW-21R-28-0912173-03		
Sample Date N=Normal, FD=Field Duplicate start_depth			10/11/2007 N	6/28/2007 N	12/17/2009 FD 24	5/6/2010 N	12/17/2009 N 24	12/17/2009 N 24		
Parameter	Unit	NJDEP GWQC	Result Qual QL	Result Qual QL	Result Qual QL	Result Qual QL	Result Qual QL	Result Qual QL		
Inorganics										
Aluminum	ug/L	200	NDR	NDR	452000	200	NDR	447000	200	NDR
Antimony	ug/L	6	NDR	NDR	60	R 60	NDR	60	R 60	NDR
Arsenic	ug/L	3	NDR	NDR	90.5	10	NDR	88.8	10	NDR
Barium	ug/L	6000	NDR	NDR	3700	J 200	NDR	3730	J 200	NDR
Beryllium	ug/L	1	NDR	NDR	23.3	5	NDR	23.1	5	NDR
Cadmium	ug/L	4	NDR	NDR	34.8	5	NDR	34.6	5	NDR
Calcium	ug/L	NS	NDR	NDR	1050000	J 10000	NDR	658000	J 5000	NDR
Chromium	ug/L	70	NDR	NDR	767	10	NDR	788	10	NDR
Cobalt	ug/L	NS	NDR	NDR	378	50	NDR	374	50	NDR
Copper	ug/L	1300	NDR	NDR	1950	J 25	NDR	1950	J 25	NDR
Iron	ug/L	300	NDR	NDR	936000	J 200	NDR	978000	J 200	11600 J 100
Lead	ug/L	5	NDR	NDR	421	J 10	NDR	427	J 10	NDR
Magnesium	ug/L	NS	NDR	NDR	359000	5000	NDR	323000	5000	NDR
Manganese	ug/L	50	NDR	NDR	22200	J 15	NDR	20300	J 15	NDR
Mercury	ug/L	2	NDR	NDR	6.3	0.2	NDR	5.9	0.2	NDR
Nickel	ug/L	100	NDR	NDR	834	40	NDR	834	40	NDR
Potassium	ug/L	NS	NDR	NDR	75900	J 5000	NDR	70000	J 5000	NDR
Selenium	ug/L	40	NDR	NDR	35	R 35	NDR	35	R 35	NDR
Silver	ug/L	40	NDR	NDR	10	U 10	NDR	10	U 10	NDR
Sodium	ug/L	50000	NDR	NDR	314000	J 5000	NDR	140000	J 5000	NDR
Thallium	ug/L	2	NDR	NDR	220	25	NDR	210	25	NDR
Vanadium	ug/L	NS	NDR	NDR	829	J 50	NDR	828	J 50	NDR
Zinc	ug/L	2000	NDR	NDR	9210	J 60	NDR	5560	J 60	NDR
PCBs										
Aroclor 1016	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	
Aroclor 1221	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	
Aroclor 1232	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	
Aroclor 1242	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	
Aroclor 1248	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	
Aroclor 1254	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	
Aroclor 1260	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	
Aroclor 1262	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	
Aroclor 1268	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	
Pesticides										
4,4-DDD	ug/L	0.1	NDR	NDR	NDR	NDR	NDR	NDR	NDR	
4,4-DDE	ug/L	0.1	NDR	NDR	NDR	NDR	NDR	NDR	NDR	
4,4-DDT	ug/L	0.1	NDR	NDR	NDR	NDR	NDR	NDR	NDR	
Aldrin	ug/L	0.04	NDR	NDR	NDR	NDR	NDR	NDR	NDR	
alpha-BHC	ug/L	0.02	NDR	NDR	NDR	NDR	NDR	NDR	NDR	
alpha-Chlordane	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	
alpha-Endosulfan	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR	NDR	

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-21D MW-21D 14006	MW-21D MW-21D N6/28/2007 13308	MW-21R FDMW-21R-28-0912109-11	MW-21R MW-21R-05/06/2010	MW-21R MW-21R-28-0912109-10	MW-21R MW-21R-28-0912173-03						
Sample Date N=Normal, FD=Field Duplicate start_depth			10/11/2007 N	6/28/2007 N	12/17/2009 FD 24	5/6/2010 N	12/17/2009 N 24	12/17/2009 N 24						
Parameter	Unit ug/L	NJDEP GWQC 0.04	Result NDR	Qual NDR	QL	Result NDR	Qual NDR	QL	Result NDR	Qual NDR	QL	Result NDR	Qual NDR	QL
beta-BHC														
beta-Endosulfan	ug/L	40	NDR			NDR			NDR			NDR		
delta-BHC	ug/L	NS	NDR			NDR			NDR			NDR		
Dieldrin	ug/L	0.03	NDR			NDR			NDR			NDR		
Endosulfan Sulfate	ug/L	40	NDR			NDR			NDR			NDR		
Endrin	ug/L	2	NDR			NDR			NDR			NDR		
Endrin Aldehyde	ug/L	NS	NDR			NDR			NDR			NDR		
Endrin Ketone	ug/L	NS	NDR			NDR			NDR			NDR		
gamma-BHC	ug/L	0.03	NDR			NDR			NDR			NDR		
Heptachlor	ug/L	0.05	NDR			NDR			NDR			NDR		
Heptachlor Epoxide	ug/L	0.2	NDR			NDR			NDR			NDR		
Methoxychlor	ug/L	40	NDR			NDR			NDR			NDR		
Toxaphene	ug/L	2	NDR			NDR			NDR			NDR		
trans-Chlordane	ug/L	NS	NDR			NDR			NDR			NDR		
Semivolatile Organic Compounds														
1,2,4,5-Tetrachlorobenzene	ug/L	NS	NDR			NDR			NDR			NDR		
2,3,4,6-Tetrachlorophenol	ug/L	200	NDR			NDR			NDR			NDR		
2,4,5-Trichlorophenol	ug/L	700	NDR		25 U 25	NDR			NDR			NDR		
2,4,6-Trichlorophenol	ug/L	20	NDR		10 U 10	NDR			NDR			NDR		
2,4-Dichlorophenol	ug/L	20	NDR		10 U 10	NDR			NDR			NDR		
2,4-Dimethylphenol	ug/L	100	NDR		10 U 10	NDR			NDR			NDR		
2,4-Dinitrophenol	ug/L	40	NDR		25 U 25	NDR			NDR			NDR		
2,4-Dinitrotoluene	ug/L	NS	NDR		10 U 10	NDR			NDR			NDR		
2,6-Dinitrotoluene	ug/L	NS	NDR		10 U 10	NDR			NDR			NDR		
2-Chloronaphthalene	ug/L	600	NDR		10 U 10	NDR			NDR			NDR		
2-Chlorophenol	ug/L	40	NDR		10 U 10	NDR			NDR			NDR		
2-Methylnaphthalene	ug/L	NS	NDR		10 U 10	NDR			NDR			NDR		
2-Methylphenol	ug/L	NS	NDR		10 U 10	NDR			NDR			NDR		
2-Nitroaniline	ug/L	NS	NDR		25 U 25	NDR			NDR			NDR		
2-Nitrophenol	ug/L	NS	NDR		10 U 10	NDR			NDR			NDR		
3,3'-Dichlorobenzidine	ug/L	30	NDR		10 U 10	NDR			NDR			NDR		
3-Nitroaniline	ug/L	NS	NDR		25 U 25	NDR			NDR			NDR		
4,6-Dinitro-2-methylphenol	ug/L	NS	NDR		25 U 25	NDR			NDR			NDR		
4-Bromophenyl Phenyl Ether	ug/L	NS	NDR		10 U 10	NDR			NDR			NDR		
4-Chloro-3-methylphenol	ug/L	NS	NDR		10 U 10	NDR			NDR			NDR		
4-Chloroaniline	ug/L	30	NDR		10 U 10	NDR			NDR			NDR		
4-Chlorophenyl-phenylether	ug/L	NS	NDR		10 U 10	NDR			NDR			NDR		
4-Methylphenol	ug/L	NS	NDR		10 U 10	NDR			NDR			NDR		
4-Nitroaniline	ug/L	NS	NDR		25 U 25	NDR			NDR			NDR		
4-Nitrophenol	ug/L	NS	NDR		25 U 25	NDR			NDR			NDR		
Acenaphthene	ug/L	400	NDR		10 U 10	NDR			NDR			NDR		
Acenaphthylene	ug/L	NS	NDR		10 U 10	NDR			NDR			NDR		
Acetophenone	ug/L	700	NDR		NDR				NDR			NDR		
Anthracene	ug/L	2000	NDR		10 U 10	NDR			NDR			NDR		
Atrazine	ug/L	3	NDR		NDR				NDR			NDR		

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-21D MW-21D 14006	MW-21D MW-21D N6/28/2007 13308	MW-21R FDMW-21R-28-0912109-11	MW-21R MW-21R-05/06/2010	MW-21R MW-21R-28-0912109-10	MW-21R MW-21R-28-0912173-03									
Sample Date N=Normal, FD=Field Duplicate start_depth			10/11/2007 N	6/28/2007 N	12/17/2009 FD 24	5/6/2010 N	12/17/2009 N 24	12/17/2009 N 24									
Parameter	Unit ug/L	NJDEP GWQC NS	Result NDR	Qual NDR	QL 10	Result NDR	Qual NDR	QL 10	Result NDR	Qual NDR	QL 10	Result NDR	Qual NDR	QL 10	Result NDR	Qual NDR	QL 10
Benzaldehyde		NS															
Benzo[a]anthracene	ug/L	0.1	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Benzo[a]pyrene	ug/L	0.1	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Benzo[b]fluoranthene	ug/L	0.2	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Benzo[g,h,i]perylene	ug/L	NS	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Benzo[k]fluoranthene	ug/L	0.5	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Biphenyl	ug/L	400	NDR		NDR		NDR		NDR		NDR		NDR		NDR		NDR
Bis(2-chloroethoxy)methane	ug/L	NS	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Bis(2-chloroethyl) Ether	ug/L	7	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Bis(2-chloroisopropyl) Ether	ug/L	300	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Bis(2-ethylhexyl) Phthalate	ug/L	3	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Butylbenzyl Phthalate	ug/L	100	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Caprolactum	ug/L	NS	NDR		NDR		NDR		NDR		NDR		NDR		NDR		NDR
Carbazole	ug/L	NS	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Chrysene	ug/L	5	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Dibenzo[a,h]anthracene	ug/L	0.3	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Dibenzofuran	ug/L	NS	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Diethyl Phthalate	ug/L	6000	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Dimethyl Phthalate	ug/L	NS	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Di-n-Butyl Phthalate	ug/L	700	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Di-n-octyl Phthalate	ug/L	100	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Fluoranthene	ug/L	300	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Fluorene	ug/L	300	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Hexachlorobenzene	ug/L	0.02	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Hexachlorobutadiene	ug/L	1	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Hexachlorocyclopentadiene	ug/L	40	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Hexachloroethane	ug/L	7	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Indeno[1,2,3-cd]pyrene	ug/L	0.2	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Isophorone	ug/L	40	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Naphthalene	ug/L	300	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Nitrobenzene	ug/L	6	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
N-Nitroso-di-n-propylamine	ug/L	10	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
N-Nitrosodiphenylamine	ug/L	10	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Pentachlorophenol	ug/L	0.3	NDR	25	U	25	NDR		NDR		NDR		NDR		NDR		NDR
Phenanthrene	ug/L	NS	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Phenol	ug/L	2000	NDR	3	J	10	NDR		NDR		NDR		NDR		NDR		NDR
Pyrene	ug/L	200	NDR	10	U	10	NDR		NDR		NDR		NDR		NDR		NDR
Volatile Organic Compounds																	
1,1,1-Trichloroethane	ug/L	30	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5
1,1,2,2-Tetrachloroethane	ug/L	2	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5
1,1,2-Trichloroethane	ug/L	3	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5
1,1-Dichloroethane	ug/L	70	560	25	600	16	87	J	5	0.5	U	0.5	56	J	2.5	NDR	
1,1-Dichloroethene	ug/L	2	0.23	J	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5
1,2,3-Trichlorobenzene	ug/L	NS	NDR		NDR		0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR	
1,2,4-Trichlorobenzene	ug/L	9	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5
1,2-Dibromo-3-chloropropane	ug/L	0.02	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-21D MW-21D 14006	MW-21D MW-21D N6/28/2007 13308	MW-21R FDMW-21R-28-0912109-11	MW-21R MW-21R-05/06/2010	MW-21R MW-21R-28-0912109-10	MW-21R MW-21R-28-0912173-03										
Sample Date N=Normal, FD=Field Duplicate start_depth			10/11/2007 N	6/28/2007 N	12/17/2009 FD 24	5/6/2010 N	12/17/2009 N 24	12/17/2009 N 24										
Parameter	Unit ug/L	NJDEP GWQC 0.03	Result 0.5	Qual U	QL 0.5	Result 16	Qual U	QL 16	Result 0.5	Qual R	QL 0.5	Result 0.5	Qual U	QL 0.5	Result 0.5	Qual R	QL 0.5	Result NDR
1,2-Dibromoethane	ug/L	600	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
1,2-Dichlorobenzene	ug/L	2	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
1,2-Dichloroethane	ug/L	1	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
1,2-Dichloropropane	ug/L	600	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
1,3-Dichlorobenzene	ug/L	75	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
1,4-Dichlorobenzene	ug/L	NS	4300	1000	2800	830	2500	J	100	2	U	2	1600	J	71	NDR		
1,4-Dioxane	ug/L	300	5	U	5	160	U	160	5	R	5	5	U	5	5	R	5	NDR
2-Butanone	ug/L	NS	3.2	J	5	160	U	160	5	R	5	5	U	5	5	R	5	NDR
2-Hexanone	ug/L	NS	5	U	5	160	U	160	5	R	5	5	U	5	5	R	5	NDR
4-Methyl-2-pentanone	ug/L	6000	3.3	J	5	160	U	160	28	R	28	5	U	5	28	R	28	NDR
Acetone	ug/L	1	420		25	350		16	1.5	J	0.5	0.5	U	0.5	1.2	J	0.5	NDR
Benzene	ug/L	NS				NDR			0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
Bromochloromethane	ug/L	1	0.5	U	0.5	16	U	16	1.4	J	0.5	0.5	U	0.5	1.7	J	0.5	NDR
Bromodichloromethane	ug/L	2	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
Bromoform	ug/L	4	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
Bromomethane	ug/L	10	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
Carbon Disulfide	ug/L	700	0.2	J	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
Carbon Tetrachloride	ug/L	2	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
Chlorobenzene	ug/L	4	0.16	J	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
Chloroethane	ug/L	290	25			360		16	18	J	0.5	0.5	U	0.5	13	J	0.5	NDR
Chloroform	ug/L	6	1.9	J	0.5	16	U	16	3.6	J	0.5	0.5	U	0.5	4.4	J	0.5	NDR
Chloromethane	ug/L	NS	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
cis-1,2-Dichloroethene	ug/L	10	8			7.4	J	16	0.5	R	0.5	0.79		0.5	0.5	R	0.5	NDR
cis-1,3-Dichloropropene	ug/L	NS	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
Cyclohexane	ug/L	NS	24	0.5		16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
Dibromochloromethane	ug/L	10	0.5	U	0.5	16	U	16	0.41	J	0.5	0.5	U	0.5	0.54	J	0.5	NDR
Dichlorodifluoromethane	ug/L	1000	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
Ethylbenzene	ug/L	700	11	0.5		16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
Freon 113	ug/L	NS	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
Isopropylbenzene	ug/L	700	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
m,p-Xylenes	ug/L	NS	NDR			NDR			0.5	R	0.5	0.14	J	0.5	0.5	R	0.5	NDR
Methyl Acetate	ug/L	7000	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
Methyl Cyclohexane	ug/L	NS	0.2	J	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
Methyl tert-Butyl Ether	ug/L	70	0.35	J	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
Methylene Chloride	ug/L	2	5.3			16	U	16	1.7	J	0.5	0.5	U	0.5	1.3	J	0.5	NDR
o-Xylene	ug/L	NS	NDR			NDR			0.5	R	0.5	0.073	J	0.5	0.5	R	0.5	NDR
Styrene	ug/L	100	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
Tetrachloroethene	ug/L	1	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
Toluene	ug/L	600	7.9	0.5		16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
trans-1,2-Dichloroethene	ug/L	100	1.4			16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
trans-1,3-Dichloropropene	ug/L	NS	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
Trichloroethene	ug/L	1	6.8	0.5		8.2	J	16	2.1	J	0.5	0.34	J	0.5	2.2	J	0.5	NDR
Trichlorofluoromethane	ug/L	2000	0.5	U	0.5	16	U	16	0.5	R	0.5	0.5	U	0.5	0.5	R	0.5	NDR
Vinyl Chloride	ug/L	5	8.9	0.5		15	J	16	1.4	J	0.5	0.5	U	0.5	1.1	J	0.5	NDR
Xylenes, Total	ug/L	40	11	1.5		16	U	16	NDR			NDR			NDR		NDR	

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-21D MW-21D 14006	MW-21D MW-21D N6/28/2007 13308	MW-21R FDMW-21R-28-0912109-11	MW-21R MW-21R-05/06/2010	MW-21R MW-21R-28-0912109-10	MW-21R MW-21R-28-0912173-03									
Sample Date N=Normal, FD=Field Duplicate start_depth			10/11/2007 N	6/28/2007 N	12/17/2009 FD 24	5/6/2010 N	12/17/2009 N 24	12/17/2009 N 24									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Biodegradation Indicator Gases																	
Ethane	ug/L	NS	NDR	140	0.025	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Ethene	ug/L	NS	NDR	1300	0.1	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Methane	ug/L	NS	NDR	5600	0.12	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR

Notes:

ug/L = micrograms per liter

Qual = validated qualifier

QL = Quantitation Limit

NDR = no data reported

NS = no standard available

Qualifiers:

J - Result or reporting limit is estimated.

U - Result was not detected at or
above the method detection limit.

R - Result was rejected.

* NJDEP GWQC: Higher of the Practical Quantitation Limit
and Ground Water Quality Criterion (N.J.A.C. 7:9C) 07/2010,
as well as Interim Groundwater Quality Criteria.

Inorganic results from MW-21R sampled in December 2009
were unfiltered grab samples collected for Bench Testing
and were not used in the Risk Assessment

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

		Sample ID sys_sample_code	MW-21R MW-21R-38-0912109-12	MW-21R MW-21R-38-0912173-05	MW-21R MW-21R-48-0912109-08	MW-21R MW-21R-48-0912173-01	MW-21R MW-21R-58-0912109-16	MW-21R MW-21R-58-0912173-06
		Sample Date N=Normal, FD=Field Duplicate start_depth	12/17/2009 N 34	12/17/2009 N 34	12/17/2009 N 44	12/17/2009 N 44	12/18/2009 N 54	12/18/2009 N 54
Parameter	Unit	NJDEP GWQC	Result Qual QL					
Inorganics								
Aluminum	ug/L	200	307000 200	NDR	129000 200	NDR	90400 200	NDR
Antimony	ug/L	6	60 R 60	NDR	60 R 60	NDR	60 R 60	NDR
Arsenic	ug/L	3	24.5 10	NDR	20.3 10	NDR	9.1 J 10	NDR
Barium	ug/L	6000	3640 J 200	NDR	1430 J 200	NDR	1230 J 200	NDR
Beryllium	ug/L	1	17.1 5	NDR	7.5 5	NDR	4.7 J 5	NDR
Cadmium	ug/L	4	17.2 5	NDR	6.8 5	NDR	3.6 J 5	NDR
Calcium	ug/L	NS	1300000 J 10000	NDR	486000 J 5000	NDR	420000 J 5000	NDR
Chromium	ug/L	70	445 10	NDR	235 10	NDR	138 10	NDR
Cobalt	ug/L	NS	256 50	NDR	109 50	NDR	66.8 50	NDR
Copper	ug/L	1300	527 J 25	NDR	534 J 25	NDR	100 J 25	NDR
Iron	ug/L	300	433000 J 100	11600 100	206000 J 100	10800 100	118000 J 100	4620 100
Lead	ug/L	5	285 J 10	NDR	122 J 10	NDR	50.5 J 10	NDR
Magnesium	ug/L	NS	284000 5000	NDR	104000 5000	NDR	88000 5000	NDR
Manganese	ug/L	50	21300 J 15	NDR	9780 J 15	NDR	3510 J 15	NDR
Mercury	ug/L	2	0.22 0.2	NDR	0.15 J 0.2	NDR	0.2 U 0.2	NDR
Nickel	ug/L	100	575 40	NDR	236 40	NDR	145 40	NDR
Potassium	ug/L	NS	86800 J 5000	NDR	31600 J 5000	NDR	31200 J 5000	NDR
Selenium	ug/L	40	35 R 35	NDR	35 R 35	NDR	35 R 35	NDR
Silver	ug/L	40	10 U 10	NDR	10 U 10	NDR	10 U 10	NDR
Sodium	ug/L	50000	466000 5000	NDR	72300 5000	NDR	121000 5000	NDR
Thallium	ug/L	2	106 25	NDR	33.9 25	NDR	21.2 J 25	NDR
Vanadium	ug/L	NS	561 J 50	NDR	266 J 50	NDR	182 J 50	NDR
Zinc	ug/L	2000	2740 J 60	NDR	3030 J 60	NDR	627 J 60	NDR
PCBs								
Aroclor 1016	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Aroclor 1221	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Aroclor 1232	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Aroclor 1242	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Aroclor 1248	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Aroclor 1254	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Aroclor 1260	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Aroclor 1262	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Aroclor 1268	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Pesticides								
4,4-DDD	ug/L	0.1	NDR	NDR	NDR	NDR	NDR	NDR
4,4-DDE	ug/L	0.1	NDR	NDR	NDR	NDR	NDR	NDR
4,4-DDT	ug/L	0.1	NDR	NDR	NDR	NDR	NDR	NDR
Aldrin	ug/L	0.04	NDR	NDR	NDR	NDR	NDR	NDR
alpha-BHC	ug/L	0.02	NDR	NDR	NDR	NDR	NDR	NDR
alpha-Chlordane	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
alpha-Endosulfan	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-21R MW-21R-38-0912109-12	MW-21R MW-21R-38-0912173-05	MW-21R MW-21R-48-0912109-08	MW-21R MW-21R-48-0912173-01	MW-21R MW-21R-58-0912109-16	MW-21R MW-21R-58-0912173-06
Sample Date N=Normal, FD=Field Duplicate start_depth			12/17/2009 N 34	12/17/2009 N 34	12/17/2009 N 44	12/17/2009 N 44	12/18/2009 N 54	12/18/2009 N 54
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL
beta-BHC	ug/L	0.04	NDR	NDR	NDR	NDR	NDR	NDR
beta-Endosulfan	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR
delta-BHC	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Dieldrin	ug/L	0.03	NDR	NDR	NDR	NDR	NDR	NDR
Endosulfan Sulfate	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR
Endrin	ug/L	2	NDR	NDR	NDR	NDR	NDR	NDR
Endrin Aldehyde	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Endrin Ketone	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
gamma-BHC	ug/L	0.03	NDR	NDR	NDR	NDR	NDR	NDR
Heptachlor	ug/L	0.05	NDR	NDR	NDR	NDR	NDR	NDR
Heptachlor Epoxide	ug/L	0.2	NDR	NDR	NDR	NDR	NDR	NDR
Methoxychlor	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR
Toxaphene	ug/L	2	NDR	NDR	NDR	NDR	NDR	NDR
trans-Chlordane	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Semivolatile Organic Compounds								
1,2,4,5-Tetrachlorobenzene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
2,3,4,6-Tetrachlorophenol	ug/L	200	NDR	NDR	NDR	NDR	NDR	NDR
2,4,5-Trichlorophenol	ug/L	700	NDR	NDR	NDR	NDR	NDR	NDR
2,4,6-Trichlorophenol	ug/L	20	NDR	NDR	NDR	NDR	NDR	NDR
2,4-Dichlorophenol	ug/L	20	NDR	NDR	NDR	NDR	NDR	NDR
2,4-Dimethylphenol	ug/L	100	NDR	NDR	NDR	NDR	NDR	NDR
2,4-Dinitrophenol	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR
2,4-Dinitrotoluene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
2,6-Dinitrotoluene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
2-Chloronaphthalene	ug/L	600	NDR	NDR	NDR	NDR	NDR	NDR
2-Chlorophenol	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR
2-Methylnaphthalene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
2-Methylphenol	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
2-Nitroaniline	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
2-Nitrophenol	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
3,3'-Dichlorobenzidine	ug/L	30	NDR	NDR	NDR	NDR	NDR	NDR
3-Nitroaniline	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
4,6-Dinitro-2-methylphenol	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
4-Bromophenyl Phenyl Ether	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
4-Chloro-3-methylphenol	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
4-Chloroaniline	ug/L	30	NDR	NDR	NDR	NDR	NDR	NDR
4-Chlorophenyl-phenylether	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
4-Methylphenol	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
4-Nitroaniline	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
4-Nitrophenol	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Acenaphthene	ug/L	400	NDR	NDR	NDR	NDR	NDR	NDR
Acenaphthylene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR
Acetophenone	ug/L	700	NDR	NDR	NDR	NDR	NDR	NDR
Anthracene	ug/L	2000	NDR	NDR	NDR	NDR	NDR	NDR
Atrazine	ug/L	3	NDR	NDR	NDR	NDR	NDR	NDR

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-21R MW-21R-38-0912109-12	MW-21R MW-21R-38-0912173-05	MW-21R MW-21R-48-0912109-08	MW-21R MW-21R-48-0912173-01	MW-21R MW-21R-58-0912109-16	MW-21R MW-21R-58-0912173-06		
Sample Date N=Normal, FD=Field Duplicate start_depth			12/17/2009 N 34	12/17/2009 N 34	12/17/2009 N 44	12/17/2009 N 44	12/18/2009 N 54	12/18/2009 N 54		
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL		
Benzaldehyde	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR		
Benzo[a]anthracene	ug/L	0.1	NDR	NDR	NDR	NDR	NDR	NDR		
Benzo[a]pyrene	ug/L	0.1	NDR	NDR	NDR	NDR	NDR	NDR		
Benzo[b]fluoranthene	ug/L	0.2	NDR	NDR	NDR	NDR	NDR	NDR		
Benzo[g,h,i]perylene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR		
Benzo[k]fluoranthene	ug/L	0.5	NDR	NDR	NDR	NDR	NDR	NDR		
Biphenyl	ug/L	400	NDR	NDR	NDR	NDR	NDR	NDR		
Bis(2-chloroethoxy)methane	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR		
Bis(2-chloroethyl) Ether	ug/L	7	NDR	NDR	NDR	NDR	NDR	NDR		
Bis(2-chloroisopropyl) Ether	ug/L	300	NDR	NDR	NDR	NDR	NDR	NDR		
Bis(2-ethylhexyl) Phthalate	ug/L	3	NDR	NDR	NDR	NDR	NDR	NDR		
Butylbenzyl Phthalate	ug/L	100	NDR	NDR	NDR	NDR	NDR	NDR		
Caprolactum	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR		
Carbazole	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR		
Chrysene	ug/L	5	NDR	NDR	NDR	NDR	NDR	NDR		
Dibenzo[a,h]anthracene	ug/L	0.3	NDR	NDR	NDR	NDR	NDR	NDR		
Dibenzofuran	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR		
Diethyl Phthalate	ug/L	6000	NDR	NDR	NDR	NDR	NDR	NDR		
Dimethyl Phthalate	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR		
Di-n-Butyl Phthalate	ug/L	700	NDR	NDR	NDR	NDR	NDR	NDR		
Di-n-octyl Phthalate	ug/L	100	NDR	NDR	NDR	NDR	NDR	NDR		
Fluoranthene	ug/L	300	NDR	NDR	NDR	NDR	NDR	NDR		
Fluorene	ug/L	300	NDR	NDR	NDR	NDR	NDR	NDR		
Hexachlorobenzene	ug/L	0.02	NDR	NDR	NDR	NDR	NDR	NDR		
Hexachlorobutadiene	ug/L	1	NDR	NDR	NDR	NDR	NDR	NDR		
Hexachlorocyclopentadiene	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR		
Hexachloroethane	ug/L	7	NDR	NDR	NDR	NDR	NDR	NDR		
Indeno[1,2,3-cd]pyrene	ug/L	0.2	NDR	NDR	NDR	NDR	NDR	NDR		
Isophorone	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR		
Naphthalene	ug/L	300	NDR	NDR	NDR	NDR	NDR	NDR		
Nitrobenzene	ug/L	6	NDR	NDR	NDR	NDR	NDR	NDR		
N-Nitroso-di-n-propylamine	ug/L	10	NDR	NDR	NDR	NDR	NDR	NDR		
N-Nitrosodiphenylamine	ug/L	10	NDR	NDR	NDR	NDR	NDR	NDR		
Pentachlorophenol	ug/L	0.3	NDR	NDR	NDR	NDR	NDR	NDR		
Phenanthrene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR		
Phenol	ug/L	2000	NDR	NDR	NDR	NDR	NDR	NDR		
Pyrene	ug/L	200	NDR	NDR	NDR	NDR	NDR	NDR		
Volatile Organic Compounds										
1,1,1-Trichloroethane	ug/L	30	0.5	R	0.5	NDR	0.5	U	0.5	NDR
1,1,2,2-Tetrachloroethane	ug/L	2	0.5	R	0.5	NDR	0.5	U	0.5	NDR
1,1,2-Trichloroethane	ug/L	3	0.5	R	0.5	NDR	0.5	U	0.5	NDR
1,1-Dichloroethane	ug/L	70	13	J	0.5	NDR	0.33	J	0.5	NDR
1,1-Dichloroethene	ug/L	2	0.5	R	0.5	NDR	0.5	U	0.5	NDR
1,2,3-Trichlorobenzene	ug/L	NS	0.5	R	0.5	NDR	0.5	U	0.5	NDR
1,2,4-Trichlorobenzene	ug/L	9	0.5	R	0.5	NDR	0.5	U	0.5	NDR
1,2-Dibromo-3-chloropropane	ug/L	0.02	0.5	R	0.5	NDR	0.5	U	0.5	NDR

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-21R MW-21R-38-0912109-12 12/17/2009 N 34			MW-21R MW-21R-38-0912173-05 12/17/2009 N 34			MW-21R MW-21R-48-0912109-08 12/17/2009 N 44			MW-21R MW-21R-48-0912173-01 12/17/2009 N 44			MW-21R MW-21R-58-0912109-16 12/18/2009 N 54			MW-21R MW-21R-58-0912173-06 12/18/2009 N 54		
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
1,2-Dibromoethane	ug/L	0.03	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
1,2-Dichlorobenzene	ug/L	600	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
1,2-Dichloroethane	ug/L	2	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
1,2-Dichloropropane	ug/L	1	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
1,3-Dichlorobenzene	ug/L	600	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
1,4-Dichlorobenzene	ug/L	75	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
1,4-Dioxane	ug/L	NS	2000	J	200	NDR	75		2	NDR	76		4.2	NDR	5	U	5	NDR	5	U
2-Butanone	ug/L	300	5	R	5	NDR	5	U	5	NDR	5	U	5	NDR	5	U	5	NDR	5	U
2-Hexanone	ug/L	NS	5	R	5	NDR	5	U	5	NDR	5	U	5	NDR	5	U	5	NDR	5	U
4-Methyl-2-pentanone	ug/L	NS	5	R	5	NDR	5	U	5	NDR	5	U	5	NDR	5	U	5	NDR	5	U
Acetone	ug/L	6000	7	R	7	NDR	7.2	U	7.2	NDR	12	U	12	NDR						
Benzene	ug/L	1	0.69	J	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Bromochloromethane	ug/L	NS	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Bromodichloromethane	ug/L	1	2.9	J	0.5	NDR	5.8		0.5	NDR	3.8		0.5	NDR	0.5	U	0.5	NDR	0.5	U
Bromoform	ug/L	4	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Bromomethane	ug/L	10	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Carbon Disulfide	ug/L	700	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Carbon Tetrachloride	ug/L	2	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Chlorobenzene	ug/L	4	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Chloroethane	ug/L	NS	3.2	J	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Chloroform	ug/L	6	5.7	J	0.5	NDR	9.2		0.5	NDR	10		0.5	NDR	10	0.5	0.5	NDR	10	0.5
Chloromethane	ug/L	NS	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
cis-1,2-Dichloroethene	ug/L	10	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
cis-1,3-Dichloropropene	ug/L	NS	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Cyclohexane	ug/L	NS	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Dibromochloromethane	ug/L	10	0.76	J	0.5	NDR	1.7		0.5	NDR	1.1		0.5	NDR	1.1	0.5	0.5	NDR	1.1	0.5
Dichlorodifluoromethane	ug/L	1000	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Ethylbenzene	ug/L	700	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Freon 113	ug/L	NS	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Isopropylbenzene	ug/L	700	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
m,p-Xylenes	ug/L	NS	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Methyl Acetate	ug/L	7000	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Methyl Cyclohexane	ug/L	NS	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Methyl tert-Butyl Ether	ug/L	70	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Methylene Chloride	ug/L	2	0.36	J	0.5	NDR	0.5	U	0.5	NDR	0.3	J	0.5	NDR	0.3	J	0.5	NDR	0.3	J
o-Xylene	ug/L	NS	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Styrene	ug/L	100	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Tetrachloroethene	ug/L	1	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Toluene	ug/L	600	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.11	J	0.5	NDR	0.11	J	0.5	NDR	0.11	J
trans-1,2-Dichloroethene	ug/L	100	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
trans-1,3-Dichloropropene	ug/L	NS	0.5	R	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U	0.5	NDR	0.5	U
Trichloroethene	ug/L	1	0.5	R	0.5	NDR														

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-21R MW-21R-38-0912109-12	MW-21R MW-21R-38-0912173-05	MW-21R MW-21R-48-0912109-08	MW-21R MW-21R-48-0912173-01	MW-21R MW-21R-58-0912109-16	MW-21R MW-21R-58-0912173-06									
Sample Date N=Normal, FD=Field Duplicate start_depth			12/17/2009 N 34	12/17/2009 N 34	12/17/2009 N 44	12/17/2009 N 44	12/18/2009 N 54	12/18/2009 N 54									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Biodegradation Indicator Gases																	
Ethane	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Ethene	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Methane	ug/L	NS	NDR			NDR			NDR			NDR			NDR		

Notes:

ug/L = micrograms per liter

Qual = validated qualifier

QL = Quantitation Limit

NDR = no data reported

NS = no standard available

Qualifiers:

J - Result or reporting limit is estimated.

U - Result was not detected at or
above the method detection limit.

R - Result was rejected.

* NJDEP GWQC: Higher of the Practical Quantitation Limit
and Ground Water Quality Criterion (N.J.A.C. 7:9C) 07/2010,
as well as Interim Groundwater Quality Criteria.

Inorganic results from MW-21R sampled in December 2009
were unfiltered grab samples collected for Bench Testing
and were not used in the Risk Assessment

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-21R MW-21R-FD-05/06/2010	MW-22D MW-22D 14006	MW-22D MW-22D N6/28/2007 13308	MW-22D MW-22DFD 14006	MW-23R MW-23R N7/2/2007 13308	MW-24D MW-24D N6/26/2007 13288									
Sample Date N=Normal, FD=Field Duplicate start_depth			5/6/2010 FD	10/11/2007 N	6/28/2007 N	10/11/2007 FD	7/2/2007 N	6/26/2007 N									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Inorganics																	
Aluminum	ug/L	200	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Antimony	ug/L	6	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Arsenic	ug/L	3	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Barium	ug/L	6000	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Beryllium	ug/L	1	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Cadmium	ug/L	4	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Calcium	ug/L	NS	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Chromium	ug/L	70	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Cobalt	ug/L	NS	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Copper	ug/L	1300	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Iron	ug/L	300	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Lead	ug/L	5	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Magnesium	ug/L	NS	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Manganese	ug/L	50	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Mercury	ug/L	2	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Nickel	ug/L	100	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Potassium	ug/L	NS	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Selenium	ug/L	40	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Silver	ug/L	40	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Sodium	ug/L	50000	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Thallium	ug/L	2	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Vanadium	ug/L	NS	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Zinc	ug/L	2000	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
PCBs																	
Aroclor 1016	ug/L	NS	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Aroclor 1221	ug/L	NS	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Aroclor 1232	ug/L	NS	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Aroclor 1242	ug/L	NS	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Aroclor 1248	ug/L	NS	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Aroclor 1254	ug/L	NS	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Aroclor 1260	ug/L	NS	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Aroclor 1262	ug/L	NS	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Aroclor 1268	ug/L	NS	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Pesticides																	
4,4-DDD	ug/L	0.1	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
4,4-DDE	ug/L	0.1	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
4,4-DDT	ug/L	0.1	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
Aldrin	ug/L	0.04	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
alpha-BHC	ug/L	0.02	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
alpha-Chlordane	ug/L	NS	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR
alpha-Endosulfan	ug/L	40	NDR		NDR	NDR		NDR	NDR		NDR		NDR		NDR		NDR

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-21R MW-21R-FD-05/06/2010	MW-22D MW-22D 14006	MW-22D MW-22D N6/28/2007 13308	MW-22D MW-22DFD 14006	MW-23R MW-23R N7/2/2007 13308	MW-24D MW-24D N6/26/2007 13288						
Sample Date N=Normal, FD=Field Duplicate start_depth			5/6/2010 FD	10/11/2007 N	6/28/2007 N	10/11/2007 FD	7/2/2007 N	6/26/2007 N						
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
beta-BHC	ug/L	0.04	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
beta-Endosulfan	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
delta-BHC	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Dieldrin	ug/L	0.03	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Endosulfan Sulfate	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Endrin	ug/L	2	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Endrin Aldehyde	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Endrin Ketone	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
gamma-BHC	ug/L	0.03	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Heptachlor	ug/L	0.05	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Heptachlor Epoxide	ug/L	0.2	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Methoxychlor	ug/L	40	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Toxaphene	ug/L	2	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
trans-Chlordane	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Semivolatile Organic Compounds														
1,2,4,5-Tetrachlorobenzene	ug/L	NS	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
2,3,4,6-Tetrachlorophenol	ug/L	200	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
2,4,5-Trichlorophenol	ug/L	700	NDR	NDR	NDR	25 U 25	NDR	NDR	25 U 25					
2,4,6-Trichlorophenol	ug/L	20	NDR	NDR	NDR	10 U 10	NDR	NDR	10 U 10					
2,4-Dichlorophenol	ug/L	20	NDR	NDR	NDR	10 U 10	NDR	NDR	10 U 10					
2,4-Dimethylphenol	ug/L	100	NDR	NDR	NDR	10 U 10	NDR	NDR	10 U 10					
2,4-Dinitrophenol	ug/L	40	NDR	NDR	NDR	25 U 25	NDR	NDR	25 U 25					
2,4-Dinitrotoluene	ug/L	NS	NDR	NDR	NDR	10 U 10	NDR	NDR	10 U 10					
2,6-Dinitrotoluene	ug/L	NS	NDR	NDR	NDR	10 U 10	NDR	NDR	10 U 10					
2-Chloronaphthalene	ug/L	600	NDR	NDR	NDR	10 U 10	NDR	NDR	10 U 10					
2-Chlorophenol	ug/L	40	NDR	NDR	NDR	10 U 10	NDR	NDR	10 U 10					
2-Methylnaphthalene	ug/L	NS	NDR	NDR	NDR	10 U 10	NDR	NDR	10 U 10					
2-Methylphenol	ug/L	NS	NDR	NDR	NDR	10 U 10	NDR	NDR	10 U 10					
2-Nitroaniline	ug/L	NS	NDR	NDR	NDR	25 U 25	NDR	NDR	25 U 25					
2-Nitrophenol	ug/L	NS	NDR	NDR	NDR	10 U 10	NDR	NDR	10 U 10					
3,3'-Dichlorobenzidine	ug/L	30	NDR	NDR	NDR	10 U 10	NDR	NDR	10 U 10					
3-Nitroaniline	ug/L	NS	NDR	NDR	NDR	25 U 25	NDR	NDR	25 U 25					
4,6-Dinitro-2-methylphenol	ug/L	NS	NDR	NDR	NDR	25 U 25	NDR	NDR	25 U 25					
4-Bromophenyl Phenyl Ether	ug/L	NS	NDR	NDR	NDR	10 U 10	NDR	NDR	10 U 10					
4-Chloro-3-methylphenol	ug/L	NS	NDR	NDR	NDR	10 U 10	NDR	NDR	10 U 10					
4-Chloroaniline	ug/L	30	NDR	NDR	NDR	10 U 10	NDR	NDR	10 U 10					
4-Chlorophenyl-phenylether	ug/L	NS	NDR	NDR	NDR	10 U 10	NDR	NDR	10 U 10					
4-Methylphenol	ug/L	NS	NDR	NDR	NDR	10 U 10	NDR	NDR	10 U 10					
4-Nitroaniline	ug/L	NS	NDR	NDR	NDR	25 U 25	NDR	NDR	25 U 25					
4-Nitrophenol	ug/L	NS	NDR	NDR	NDR	25 U 25	NDR	NDR	25 U 25					
Acenaphthene	ug/L	400	NDR	NDR	NDR	10 U 10	NDR	NDR	10 U 10					
Acenaphthylene	ug/L	NS	NDR	NDR	NDR	10 U 10	NDR	NDR	10 U 10					
Acetophenone	ug/L	700	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
Anthracene	ug/L	2000	NDR	NDR	NDR	10 U 10	NDR	NDR	10 U 10					
Atrazine	ug/L	3	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-21R MW-21R-FD-05/06/2010	MW-22D MW-22D 14006	MW-22D MW-22D N6/28/2007 13308	MW-22D MW-22DFD 14006	MW-23R MW-23R N7/2/2007 13308	MW-24D MW-24D N6/26/2007 13288						
Sample Date N=Normal, FD=Field Duplicate start_depth			5/6/2010 FD	10/11/2007 N	6/28/2007 N	10/11/2007 FD	7/2/2007 N	6/26/2007 N						
Parameter	Unit ug/L	NJDEP GWQC NS	Result NDR	Qual NDR	QL	Result NDR	Qual NDR	QL	Result NDR	Qual NDR	QL	Result NDR	Qual NDR	QL
Benzaldehyde														
Benzo[a]anthracene	ug/L	0.1	NDR			10	U	10	NDR			10	U	10
Benzo[a]pyrene	ug/L	0.1	NDR			10	U	10	NDR			10	U	10
Benzo[b]fluoranthene	ug/L	0.2	NDR			10	U	10	NDR			10	U	10
Benzo[g,h,i]perylene	ug/L	NS	NDR			10	U	10	NDR			10	U	10
Benzo[k]fluoranthene	ug/L	0.5	NDR			10	U	10	NDR			10	U	10
Biphenyl	ug/L	400	NDR			NDR			NDR			NDR		
Bis(2-chloroethoxy)methane	ug/L	NS	NDR			10	U	10	NDR			10	U	10
Bis(2-chloroethyl) Ether	ug/L	7	NDR			10	U	10	NDR			10	U	10
Bis(2-chloroisopropyl) Ether	ug/L	300	NDR			10	U	10	NDR			10	U	10
Bis(2-ethylhexyl) Phthalate	ug/L	3	NDR			10	U	10	NDR			10	U	10
Butylbenzyl Phthalate	ug/L	100	NDR			10	U	10	NDR			10	U	10
Caprolactum	ug/L	NS	NDR			NDR			NDR			NDR		
Carbazole	ug/L	NS	NDR			10	U	10	NDR			10	U	10
Chrysene	ug/L	5	NDR			10	U	10	NDR			10	U	10
Dibenzo[a,h]anthracene	ug/L	0.3	NDR			10	U	10	NDR			10	U	10
Dibenzofuran	ug/L	NS	NDR			10	U	10	NDR			10	U	10
Diethyl Phthalate	ug/L	6000	NDR			10	U	10	NDR			10	U	10
Dimethyl Phthalate	ug/L	NS	NDR			10	U	10	NDR			10	U	10
Di-n-Butyl Phthalate	ug/L	700	NDR			10	U	10	NDR			10	U	10
Di-n-octyl Phthalate	ug/L	100	NDR			10	U	10	NDR			10	U	10
Fluoranthene	ug/L	300	NDR			10	U	10	NDR			10	U	10
Fluorene	ug/L	300	NDR			10	U	10	NDR			10	U	10
Hexachlorobenzene	ug/L	0.02	NDR			10	U	10	NDR			10	U	10
Hexachlorobutadiene	ug/L	1	NDR			10	U	10	NDR			10	U	10
Hexachlorocyclopentadiene	ug/L	40	NDR			10	U	10	NDR			10	U	10
Hexachloroethane	ug/L	7	NDR			10	U	10	NDR			10	U	10
Indeno[1,2,3-cd]pyrene	ug/L	0.2	NDR			10	U	10	NDR			10	U	10
Isophorone	ug/L	40	NDR			10	U	10	NDR			10	U	10
Naphthalene	ug/L	300	NDR			10	U	10	NDR			10	U	10
Nitrobenzene	ug/L	6	NDR			10	U	10	NDR			10	U	10
N-Nitroso-di-n-propylamine	ug/L	10	NDR			10	U	10	NDR			10	U	10
N-Nitrosodiphenylamine	ug/L	10	NDR			10	U	10	NDR			10	U	10
Pentachlorophenol	ug/L	0.3	NDR			NDR			25	U	25	NDR		
Phenanthrene	ug/L	NS	NDR			NDR			10	U	10	NDR		
Phenol	ug/L	2000	NDR			NDR			10	U	10	NDR		
Pyrene	ug/L	200	NDR			NDR			10	U	10	NDR		
Volatile Organic Compounds														
1,1,1-Trichloroethane	ug/L	30	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,1,2,2-Tetrachloroethane	ug/L	2	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,1,2-Trichloroethane	ug/L	3	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,1-Dichloroethane	ug/L	70	0.5	U	0.5	0.83	0.5	0.9	0.88	0.5	0.5	0.28	J	0.5
1,1-Dichloroethene	ug/L	2	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,2,3-Trichlorobenzene	ug/L	NS	0.5	U	0.5	NDR			NDR			NDR		
1,2,4-Trichlorobenzene	ug/L	9	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,2-Dibromo-3-chloropropane	ug/L	0.02	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-21R MW-21R-FD-05/06/2010			MW-22D MW-22D 14006			MW-22D MW-22D N6/28/2007 13308			MW-22D MW-22DFD 14006			MW-23R MW-23R N7/2/2007 13308		
Sample Date N=Normal, FD=Field Duplicate start_depth			5/6/2010 FD			10/11/2007 N			6/28/2007 N			10/11/2007 FD			7/2/2007 N		
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
1,2-Dibromoethane	ug/L	0.03	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,2-Dichlorobenzene	ug/L	600	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,2-Dichloroethane	ug/L	2	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.46	J	0.5
1,2-Dichloropropane	ug/L	1	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,3-Dichlorobenzene	ug/L	600	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,4-Dichlorobenzene	ug/L	75	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,4-Dioxane	ug/L	NS	1.1	J	2	1300	250	NDR	1300	250	2	U	2	0.47	J	2	
2-Butanone	ug/L	300	5	U	5	5	U	5	5	U	5	5	U	5	5	U	5
2-Hexanone	ug/L	NS	5	U	5	5	U	5	5	U	5	5	U	5	5	U	5
4-Methyl-2-pentanone	ug/L	NS	5	U	5	5	U	5	5	U	5	5	U	5	5	U	5
Acetone	ug/L	6000	5	U	5	3.2	J	5	5	U	5	4.5	J	5	5	U	5
Benzene	ug/L	1	0.5	U	0.5	0.15	J	0.5	0.5	U	0.5	0.1	J	0.5	0.1	J	0.5
Bromochloromethane	ug/L	NS	0.5	U	0.5	NDR			NDR			NDR			NDR		
Bromodichloromethane	ug/L	1	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Bromoform	ug/L	4	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Bromomethane	ug/L	10	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Carbon Disulfide	ug/L	700	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Carbon Tetrachloride	ug/L	2	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Chlorobenzene	ug/L	4	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Chloroethane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Chloroform	ug/L	6	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Chloromethane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
cis-1,2-Dichloroethene	ug/L	10	0.76	0.5	0.5	0.5	U	0.5	0.5	U	0.5	0.16	J	0.5	1.2	J	0.5
cis-1,3-Dichloropropene	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Cyclohexane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Dibromochloromethane	ug/L	10	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Dichlorodifluoromethane	ug/L	1000	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Ethylbenzene	ug/L	700	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Freon 113	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Isopropylbenzene	ug/L	700	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
m,p-Xylenes	ug/L	NS	0.14	J	0.5	NDR			NDR			NDR			NDR		
Methyl Acetate	ug/L	7000	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Methyl Cyclohexane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Methyl tert-Butyl Ether	ug/L	70	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Methylene Chloride	ug/L	2	0.24	J	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
o-Xylene	ug/L	NS	0.077	J	0.5	NDR			NDR			NDR			NDR		
Styrene	ug/L	100	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Tetrachloroethene	ug/L	1	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.26	J	0.5	0.52	0.5	
Toluene	ug/L	600	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
trans-1,2-Dichloroethene	ug/L	100	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
trans-1,3-Dichloropropene	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Trichloroethene	ug/L	1	0.32	J	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	1.5	0.5	2.8
Trichlorofluoromethane	ug/L	2000	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Vinyl Chloride	ug/L	5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Xylenes, Total	ug/L	40	NDR			1.5	U	1.5	0.5	U	0.5	1.5	U	1.5	0.5	U	0.5

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-21R MW-21R-FD-05/06/2010	MW-22D MW-22D 14006	MW-22D MW-22D N6/28/2007 13308	MW-22D MW-22DFD 14006	MW-23R MW-23R N7/2/2007 13308	MW-24D MW-24D N6/26/2007 13288									
Sample Date N=Normal, FD=Field Duplicate start_depth			5/6/2010 FD	10/11/2007 N	6/28/2007 N	10/11/2007 FD	7/2/2007 N	6/26/2007 N									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Biodegradation Indicator Gases																	
Ethane	ug/L	NS	NDR	NDR	23	0.025	NDR	0.48	0.025	0.2	0.025						
Ethene	ug/L	NS	NDR	NDR	2.3	0.025	NDR	0.23	0.025	0.1	0.025						
Methane	ug/L	NS	NDR	NDR	930	0.1	NDR	2.6	0.1	35	0.1						

Notes:

ug/L = micrograms per liter

Qual = validated qualifier

QL = Quantitation Limit

NDR = no data reported

NS = no standard available

Qualifiers:

J - Result or reporting limit is estimated.

U - Result was not detected at or

above the method detection limit.

R - Result was rejected.

* NJDEP GWQC: Higher of the Practical Quantitation Limit

and Ground Water Quality Criterion (N.J.A.C. 7:9C) 07/2010,

as well as Interim Groundwater Quality Criteria.

Inorganic results from MW-21R sampled in December 2009
were unfiltered grab samples collected for Bench Testing
and were not used in the Risk Assessment

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-24R MW-24R N6/27/2007 13288	MW-25D MW-25D N6/25/2007 13288	MW-25R MW-25R N6/25/2007 13288	MW-26D MW-26D N6/26/2007 13288	MW-27R MW-27R N6/26/2007 13288	MW-27R MW-27RFD FD6/26/2007 13288									
Sample Date N=Normal, FD=Field Duplicate start_depth			6/27/2007 N	6/25/2007 N	6/25/2007 N	6/26/2007 N	6/26/2007 N	6/26/2007 FD									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Inorganics																	
Aluminum	ug/L	200	NDR			NDR			NDR			NDR			NDR		
Antimony	ug/L	6	NDR			NDR			NDR			NDR			NDR		
Arsenic	ug/L	3	NDR			NDR			NDR			NDR			NDR		
Barium	ug/L	6000	NDR			NDR			NDR			NDR			NDR		
Beryllium	ug/L	1	NDR			NDR			NDR			NDR			NDR		
Cadmium	ug/L	4	NDR			NDR			NDR			NDR			NDR		
Calcium	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Chromium	ug/L	70	NDR			NDR			NDR			NDR			NDR		
Cobalt	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Copper	ug/L	1300	NDR			NDR			NDR			NDR			NDR		
Iron	ug/L	300	NDR			NDR			NDR			NDR			NDR		
Lead	ug/L	5	NDR			NDR			NDR			NDR			NDR		
Magnesium	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Manganese	ug/L	50	NDR			NDR			NDR			NDR			NDR		
Mercury	ug/L	2	NDR			NDR			NDR			NDR			NDR		
Nickel	ug/L	100	NDR			NDR			NDR			NDR			NDR		
Potassium	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Selenium	ug/L	40	NDR			NDR			NDR			NDR			NDR		
Silver	ug/L	40	NDR			NDR			NDR			NDR			NDR		
Sodium	ug/L	50000	NDR			NDR			NDR			NDR			NDR		
Thallium	ug/L	2	NDR			NDR			NDR			NDR			NDR		
Vanadium	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Zinc	ug/L	2000	NDR			NDR			NDR			NDR			NDR		
PCBs																	
Aroclor 1016	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1221	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1232	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1242	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1248	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1254	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1260	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1262	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Aroclor 1268	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Pesticides																	
4,4-DDD	ug/L	0.1	NDR			NDR			NDR			NDR			NDR		
4,4-DDE	ug/L	0.1	NDR			NDR			NDR			NDR			NDR		
4,4-DDT	ug/L	0.1	NDR			NDR			NDR			NDR			NDR		
Aldrin	ug/L	0.04	NDR			NDR			NDR			NDR			NDR		
alpha-BHC	ug/L	0.02	NDR			NDR			NDR			NDR			NDR		
alpha-Chlordane	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
alpha-Endosulfan	ug/L	40	NDR			NDR			NDR			NDR			NDR		

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-24R MW-24R N6/27/2007 13288	MW-25D MW-25D N6/25/2007 13288	MW-25R MW-25R N6/25/2007 13288	MW-26D MW-26D N6/26/2007 13288	MW-27R MW-27R N6/26/2007 13288	MW-27R MW-27RFD FD6/26/2007 13288									
Sample Date N=Normal, FD=Field Duplicate start_depth			6/27/2007 N	6/25/2007 N	6/25/2007 N	6/26/2007 N	6/26/2007 N	6/26/2007 FD									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
beta-BHC	ug/L	0.04	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
beta-Endosulfan	ug/L	40	NDR			NDR			NDR			NDR			NDR		
delta-BHC	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Dieldrin	ug/L	0.03	NDR			NDR			NDR			NDR			NDR		
Endosulfan Sulfate	ug/L	40	NDR			NDR			NDR			NDR			NDR		
Endrin	ug/L	2	NDR			NDR			NDR			NDR			NDR		
Endrin Aldehyde	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Endrin Ketone	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
gamma-BHC	ug/L	0.03	NDR			NDR			NDR			NDR			NDR		
Heptachlor	ug/L	0.05	NDR			NDR			NDR			NDR			NDR		
Heptachlor Epoxide	ug/L	0.2	NDR			NDR			NDR			NDR			NDR		
Methoxychlor	ug/L	40	NDR			NDR			NDR			NDR			NDR		
Toxaphene	ug/L	2	NDR			NDR			NDR			NDR			NDR		
trans-Chlordane	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Semivolatile Organic Compounds																	
1,2,4,5-Tetrachlorobenzene	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
2,3,4,6-Tetrachlorophenol	ug/L	200	NDR			NDR			NDR			NDR			NDR		
2,4,5-Trichlorophenol	ug/L	700	25	U	25	25	U	25	25	U	25	25	U	25	25	U	25
2,4,6-Trichlorophenol	ug/L	20	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10
2,4-Dichlorophenol	ug/L	20	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10
2,4-Dimethylphenol	ug/L	100	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10
2,4-Dinitrophenol	ug/L	40	25	U	25	25	U	25	25	U	25	25	U	25	25	U	25
2,4-Dinitrotoluene	ug/L	NS	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10
2,6-Dinitrotoluene	ug/L	NS	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10
2-Chloronaphthalene	ug/L	600	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10
2-Chlorophenol	ug/L	40	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10
2-Methylnaphthalene	ug/L	NS	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10
2-Methylphenol	ug/L	NS	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10
2-Nitroaniline	ug/L	NS	25	U	25	25	U	25	25	U	25	25	U	25	25	U	25
2-Nitrophenol	ug/L	NS	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10
3,3'-Dichlorobenzidine	ug/L	30	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10
3-Nitroaniline	ug/L	NS	25	U	25	25	U	25	25	U	25	25	U	25	25	U	25
4,6-Dinitro-2-methylphenol	ug/L	NS	25	U	25	25	U	25	25	U	25	25	U	25	25	U	25
4-Bromophenyl Phenyl Ether	ug/L	NS	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10
4-Chloro-3-methylphenol	ug/L	NS	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10
4-Chloroaniline	ug/L	30	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10
4-Chlorophenyl-phenylether	ug/L	NS	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10
4-Methylphenol	ug/L	NS	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10
4-Nitroaniline	ug/L	NS	25	U	25	25	U	25	25	U	25	25	U	25	25	U	25
4-Nitrophenol	ug/L	NS	25	U	25	25	U	25	25	U	25	25	U	25	25	U	25
Acenaphthene	ug/L	400	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10
Acenaphthylene	ug/L	NS	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10
Acetophenone	ug/L	700	NDR			NDR			NDR			NDR			NDR		
Anthracene	ug/L	2000	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10
Atrazine	ug/L	3	NDR			NDR									NDR		

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-24R MW-24R N6/27/2007 13288	MW-25D MW-25D N6/25/2007 13288	MW-25R MW-25R N6/25/2007 13288	MW-26D MW-26D N6/26/2007 13288	MW-27R MW-27R N6/26/2007 13288	MW-27R MW-27RFD FD6/26/2007 13288										
Sample Date N=Normal, FD=Field Duplicate start_depth			6/27/2007 N	6/25/2007 N	6/25/2007 N	6/26/2007 N	6/26/2007 N	6/26/2007 FD										
Parameter	Unit ug/L	NJDEP GWQC NS	Result NDR	Qual U	QL 10	Result NDR	Qual U	QL 10	Result NDR	Qual U	QL 10	Result NDR	Qual U	QL 10	Result NDR	Qual U	QL 10	
Benzaldehyde																		
Benzo[a]anthracene	ug/L	0.1	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Benzo[a]pyrene	ug/L	0.1	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Benzo[b]fluoranthene	ug/L	0.2	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Benzo[g,h,i]perylene	ug/L	NS	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Benzo[k]fluoranthene	ug/L	0.5	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Biphenyl	ug/L	400	NDR			NDR			NDR			NDR			NDR			
Bis(2-chloroethoxy)methane	ug/L	NS	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Bis(2-chloroethyl) Ether	ug/L	7	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Bis(2-chloroisopropyl) Ether	ug/L	300	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Bis(2-ethylhexyl) Phthalate	ug/L	3	10	U	10	4	J	10	10	U	10	10	U	10	10	U	10	
Butylbenzyl Phthalate	ug/L	100	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Caprolactum	ug/L	NS	NDR			NDR			NDR			NDR			NDR			
Carbazole	ug/L	NS	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Chrysene	ug/L	5	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Dibenzo[a,h]anthracene	ug/L	0.3	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Dibenzofuran	ug/L	NS	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Diethyl Phthalate	ug/L	6000	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Dimethyl Phthalate	ug/L	NS	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Di-n-Butyl Phthalate	ug/L	700	10	U	10	2	J	10	10	U	10	10	U	10	10	U	10	
Di-n-octyl Phthalate	ug/L	100	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Fluoranthene	ug/L	300	3	J	10	10	U	10	10	U	10	10	U	10	10	U	10	
Fluorene	ug/L	300	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Hexachlorobenzene	ug/L	0.02	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Hexachlorobutadiene	ug/L	1	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Hexachlorocyclopentadiene	ug/L	40	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Hexachloroethane	ug/L	7	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Indeno[1,2,3-cd]pyrene	ug/L	0.2	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Isophorone	ug/L	40	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Naphthalene	ug/L	300	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Nitrobenzene	ug/L	6	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
N-Nitroso-di-n-propylamine	ug/L	10	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
N-Nitrosodiphenylamine	ug/L	10	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Pentachlorophenol	ug/L	0.3	25	U	25	25	U	25	25	U	25	25	U	25	25	U	25	
Phenanthrene	ug/L	NS	2	J	10	10	U	10	10	U	10	10	U	10	10	U	10	
Phenol	ug/L	2000	10	U	10	10	U	10	10	U	10	10	U	10	10	U	10	
Pyrene	ug/L	200	2	J	10	10	U	10	10	U	10	10	U	10	10	U	10	
Volatile Organic Compounds																		
1,1,1-Trichloroethane	ug/L	30	0.5	U	0.5	0.25	J	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
1,1,2,2-Tetrachloroethane	ug/L	2	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
1,1,2-Trichloroethane	ug/L	3	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
1,1-Dichloroethane	ug/L	70	0.59	0.5	1.5	0.5	0.5	U	0.5	0.46	J	0.5	0.5	U	0.5	0.5	U	0.5
1,1-Dichloroethene	ug/L	2	0.47	J	0.5	2.9	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	U	0.5
1,2,3-Trichlorobenzene	ug/L	NS	NDR			NDR			NDR			NDR			NDR			
1,2,4-Trichlorobenzene	ug/L	9	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
1,2-Dibromo-3-chloropropane	ug/L	0.02	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-24R MW-24R N6/27/2007 13288	MW-25D MW-25D N6/25/2007 13288	MW-25R MW-25R N6/25/2007 13288	MW-26D MW-26D N6/26/2007 13288	MW-27R MW-27R N6/26/2007 13288	MW-27R MW-27RFD FD6/26/2007 13288									
Sample Date N=Normal, FD=Field Duplicate start_depth			6/27/2007 N	6/25/2007 N	6/25/2007 N	6/26/2007 N	6/26/2007 N	6/26/2007 FD									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
1,2-Dibromoethane	ug/L	0.03	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,2-Dichlorobenzene	ug/L	600	0.11	J	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,2-Dichloroethane	ug/L	2	1.6		0.5	3.1		0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,2-Dichloropropane	ug/L	1	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,3-Dichlorobenzene	ug/L	600	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,4-Dichlorobenzene	ug/L	75	0.15	J	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,4-Dioxane	ug/L	NS	0.67	J	2	1	J	2	2	U	2	0.84	J	2	2	U	2
2-Butanone	ug/L	300	5	UJ	5	5	U	5	5	U	5	5	U	5	5	U	5
2-Hexanone	ug/L	NS	5	UJ	5	5	U	5	5	U	5	5	U	5	5	U	5
4-Methyl-2-pentanone	ug/L	NS	5	UJ	5	5	U	5	5	U	5	5	U	5	5	U	5
Acetone	ug/L	6000	55	J	5	5	U	5	5	U	5	5	U	5	5	U	5
Benzene	ug/L	1	0.16	J	0.5	0.21	J	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Bromochloromethane	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Bromodichloromethane	ug/L	1	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Bromoform	ug/L	4	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Bromomethane	ug/L	10	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Carbon Disulfide	ug/L	700	0.15	J	0.5	1.1		0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Carbon Tetrachloride	ug/L	2	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Chlorobenzene	ug/L	4	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Chloroethane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Chloroform	ug/L	6	0.53		0.5	0.68		0.5	0.5	U	0.5	0.95		0.5	1		0.89
Chloromethane	ug/L	NS	0.5	U	0.5	0.11	J	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
cis-1,2-Dichloroethene	ug/L	10	2.5		0.5	13		0.5	0.5	U	0.5	2.6		0.5	0.5	UJ	0.5
cis-1,3-Dichloropropene	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Cyclohexane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Dibromochloromethane	ug/L	10	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Dichlorodifluoromethane	ug/L	1000	0.53		0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Ethylbenzene	ug/L	700	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Freon 113	ug/L	NS	0.63		0.5	0.77		0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Isopropylbenzene	ug/L	700	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
m,p-Xylenes	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Methyl Acetate	ug/L	7000	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Methyl Cyclohexane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Methyl tert-Butyl Ether	ug/L	70	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Methylene Chloride	ug/L	2	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
o-Xylene	ug/L	NS	NDR			NDR			NDR			NDR			NDR		
Styrene	ug/L	100	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Tetrachloroethene	ug/L	1	2.8		0.5	1.9		0.5	0.1	J	0.5	0.5	U	0.5	0.5	U	0.5
Toluene	ug/L	600	0.5	U	0.5	0.72		0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
trans-1,2-Dichloroethene	ug/L	100	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
trans-1,3-Dichloropropene	ug/L	NS	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Trichloroethene	ug/L	1	6.8		0.5	23		0.5	0.14	J	0.5	0.25	J	0.5	0.15	J	0.5
Trichlorofluoromethane	ug/L	2000	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Vinyl Chloride	ug/L	5	0.5	U	0.5	0.21	J	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Xylenes, Total	ug/L	40	0.5	U	0.5	0.15	J	0.5	0.5	U	0.5	0.5	U	0.5	0.91		0.59

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Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-24R MW-24R N6/27/2007 13288	MW-25D MW-25D N6/25/2007 13288	MW-25R MW-25R N6/25/2007 13288	MW-26D MW-26D N6/26/2007 13288	MW-27R MW-27R N6/26/2007 13288	MW-27R MW-27RFD FD6/26/2007 13288									
Sample Date N=Normal, FD=Field Duplicate start_depth			6/27/2007 N	6/25/2007 N	6/25/2007 N	6/26/2007 N	6/26/2007 N	6/26/2007 FD									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Biodegradation Indicator Gases																	
Ethane	ug/L	NS	1	0.025	0.2	0.025	1.1	0.025	0.15	0.025	0.76	0.025	0.86	0.025			
Ethene	ug/L	NS	0.64	0.025	0.31	0.025	0.55	0.025	0.19	0.025	0.45	0.025	0.48	0.025			
Methane	ug/L	NS	92	0.1	50	0.1	1.9	0.1	21	0.1	1.9	0.1	2	0.1			

Notes:

ug/L = micrograms per liter

Qual = validated qualifier

QL = Quantitation Limit

NDR = no data reported

NS = no standard available

Qualifiers:

J - Result or reporting limit is estimated.

U - Result was not detected at or
above the method detection limit.

R - Result was rejected.

* NJDEP GWQC: Higher of the Practical Quantitation Limit
and Ground Water Quality Criterion (N.J.A.C. 7:9C) 07/2010,
as well as Interim Groundwater Quality Criteria.

Inorganic results from MW-21R sampled in December 2009
were unfiltered grab samples collected for Bench Testing
and were not used in the Risk Assessment

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code Sample Date N=Normal, FD=Field Duplicate start_depth			MW-28R MW-28R N6/28/2007 13308	MW-5D MW-5D 12/21/2009	MW-5D MW-5D FD-0912178-16	MW-5D MW-5D N7/5/2007 13331	MW-5D MW-5D_12022010	MW-5D MW-5D-1590716
Parameter	Unit	NJDEP GWQC	Result Qual QL	Result Qual QL	Result Qual QL	Result Qual QL	Result Qual QL	Result Qual QL
Inorganics								
Aluminum	ug/L	200	NDR	200 U 200	200 U 200	200 U 200	110 J 200	200 UJ 200
Antimony	ug/L	6	NDR	2 U 2	2 U 2	60 U 60	2 U 2	60 UJ 60
Arsenic	ug/L	3	NDR	0.87 J 1	1.1 1	10 U 10	0.86 J 1	10 UJ 10
Barium	ug/L	6000	NDR	24.7 J 10	23.4 10	200 U 200	24.2 10	20.6 J 200
Beryllium	ug/L	1	NDR	1 U 1	1 U 1	5 U 5	1 U 1	5 UJ 5
Cadmium	ug/L	4	NDR	1 U 1	0.16 J 1	5 U 5	0.08 J 1	5 UJ 5
Calcium	ug/L	NS	NDR	260000 5000	277000 5000	258000 5000	270000 J 5000	272000 J 5000
Chromium	ug/L	70	NDR	13.7 J 2	13 2	10 U 10	211 2	1.4 J 10
Cobalt	ug/L	NS	NDR	1 U 1	0.34 J 1	50 U 50	0.66 J 1	50 UJ 50
Copper	ug/L	1300	NDR	2 U 2	1.8 J 2	25 U 25	3.7 2	25 UJ 25
Iron	ug/L	300	NDR	100 U 100	100 U 100	100 U 100	1030 100	100 UJ 100
Lead	ug/L	5	NDR	1 U 1	0.28 J 1	3 U 3	1.9 J 1	3 UJ 3
Magnesium	ug/L	NS	NDR	16100 5000	16900 5000	17000 5000	17600 5000	16900 J 5000
Manganese	ug/L	50	NDR	111 1	105 1	112 15	103 1	121 J 15
Mercury	ug/L	2	NDR	0.2 U 0.2	0.2 U 0.2	0.2 U 0.2	0.2 UJ 0.2	0.2 UJ 0.2
Nickel	ug/L	100	NDR	7.5 1	7.5 1	40 U 40	20.9 1	40 UJ 40
Potassium	ug/L	NS	NDR	1630 J 5000	5000 U 5000	5000 U 5000	1380 J 5000	5000 UJ 5000
Selenium	ug/L	40	NDR	2.3 J 5	2.7 J 5	5 U 5	4.3 J 5	5.2 J 5
Silver	ug/L	40	NDR	1 U 1	1 U 1	10 U 10	1 U 1	10 UJ 10
Sodium	ug/L	50000	NDR	64100 5000	66700 5000	62300 5000	63700 5000	64000 J 5000
Thallium	ug/L	2	NDR	1 U 1	1 U 1	10 U 10	1 U 1	10 UJ 10
Vanadium	ug/L	NS	NDR	5 U 5	0.48 J 5	50 U 50	6.4 J 5	50 UJ 50
Zinc	ug/L	2000	NDR	6.3 J 2	7.4 2	20 U 20	29.2 2	20 UJ 20
PCBs								
Aroclor 1016	ug/L	NS	NDR	1 U 1	1 U 1	1 U 1	0.98 U 0.98	1 UJ 1
Aroclor 1221	ug/L	NS	NDR	1 U 1	1 U 1	2 U 2	0.98 U 0.98	2 UJ 2
Aroclor 1232	ug/L	NS	NDR	1 U 1	1 U 1	1 U 1	0.98 U 0.98	1 UJ 1
Aroclor 1242	ug/L	NS	NDR	1 U 1	1 U 1	1 U 1	0.98 U 0.98	1 UJ 1
Aroclor 1248	ug/L	NS	NDR	1 U 1	1 U 1	1 U 1	0.98 U 0.98	1 UJ 1
Aroclor 1254	ug/L	NS	NDR	1 U 1	1 U 1	1 U 1	0.98 U 0.98	1 UJ 1
Aroclor 1260	ug/L	NS	NDR	1 U 1	1 U 1	1 U 1	0.98 U 0.98	1 UJ 1
Aroclor 1262	ug/L	NS	NDR	1 U 1	1 U 1	NDR	0.98 U 0.98	NDR
Aroclor 1268	ug/L	NS	NDR	1 U 1	1 U 1	NDR	0.98 U 0.98	NDR
Pesticides								
4,4-DDD	ug/L	0.1	NDR	0.1 U 0.1	0.1 U 0.1	0.1 U 0.1	0.098 U 0.098	0.1 UJ 0.1
4,4-DDE	ug/L	0.1	NDR	0.1 U 0.1	0.1 U 0.1	0.1 U 0.1	0.098 U 0.098	0.1 UJ 0.1
4,4-DDT	ug/L	0.1	NDR	0.1 U 0.1	0.1 U 0.1	0.1 U 0.1	0.098 U 0.098	0.1 UJ 0.1
Aldrin	ug/L	0.04	NDR	0.05 U 0.05	0.05 U 0.05	0.05 U 0.05	0.049 U 0.049	0.05 UJ 0.05
alpha-BHC	ug/L	0.02	NDR	0.05 U 0.05	0.05 U 0.05	0.05 U 0.05	0.049 U 0.049	0.05 UJ 0.05
alpha-Chlordane	ug/L	NS	NDR	0.05 U 0.05	0.05 U 0.05	0.05 U 0.05	0.049 U 0.049	0.05 UJ 0.05
alpha-Endosulfan	ug/L	40	NDR	0.05 U 0.05	0.05 U 0.05	0.05 U 0.05	0.049 U 0.049	0.05 UJ 0.05

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

			Sample ID sys_sample_code	MW-28R MW-28R N6/28/2007 13308	MW-5D MW-5D 12/21/2009	MW-5D MW-5D FD-0912178-16	MW-5D MW-5D N7/5/2007 13331	MW-5D MW-5D_12022010	MW-5D MW-5D-1590716									
			Sample Date N=Normal, FD=Field Duplicate start_depth	6/28/2007 N	12/21/2009 N	12/21/2009 FD	7/5/2007 N	12/2/2010 N	8/6/2008 N									
Parameter	Unit	NJDEP GWQC		Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
beta-BHC	ug/L	0.04			NDR		0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.049	U	0.049
beta-Endosulfan	ug/L	40		NDR			0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.098	U	0.098
delta-BHC	ug/L	NS		NDR			0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.049	U	0.049
Dieldrin	ug/L	0.03		NDR			0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.098	U	0.098
Endosulfan Sulfate	ug/L	40		NDR			0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.098	U	0.098
Endrin	ug/L	2		NDR			0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.098	U	0.098
Endrin Aldehyde	ug/L	NS		NDR			0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.098	U	0.098
Endrin Ketone	ug/L	NS		NDR			0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.098	U	0.098
gamma-BHC	ug/L	0.03		NDR			0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.049	U	0.049
Heptachlor	ug/L	0.05		NDR			0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.049	U	0.049
Heptachlor Epoxide	ug/L	0.2		NDR			0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.049	U	0.049
Methoxychlor	ug/L	40		NDR			0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.49	U	0.49
Toxaphene	ug/L	2		NDR			5	U	5	5	U	5	5	U	5	4.9	U	4.9
trans-Chlordane	ug/L	NS		NDR			0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.049	U	0.049
Semivolatile Organic Compounds																		
1,2,4,5-Tetrachlorobenzene	ug/L	NS		NDR			5	U	5	5	U	5	NDR			4.8	U	4.8
2,3,4,6-Tetrachlorophenol	ug/L	200		NDR			5	U	5	5	U	5	NDR			4.8	U	4.8
2,4,5-Trichlorophenol	ug/L	700		25 U 25			5	U	5	5	U	5	25 U 25			4.8	U	4.8
2,4,6-Trichlorophenol	ug/L	20		10 U 10			5	U	5	5	U	5	10 U 10			4.8	U	4.8
2,4-Dichlorophenol	ug/L	20		10 U 10			5	U	5	5	U	5	10 U 10			4.8	U	4.8
2,4-Dimethylphenol	ug/L	100		10 U 10			5	U	5	5	U	5	10 U 10			4.8	U	4.8
2,4-Dinitrophenol	ug/L	40		25 U 25			10	U	10	10	U	10	25 U 25			9.5	U	9.5
2,4-Dinitrotoluene	ug/L	NS		10 U 10			5	U	5	5	U	5	10 U 10			4.8	U	4.8
2,6-Dinitrotoluene	ug/L	NS		10 U 10			5	U	5	5	U	5	10 U 10			4.8	U	4.8
2-Chloronaphthalene	ug/L	600		10 U 10			5	U	5	5	U	5	10 U 10			4.8	U	4.8
2-Chlorophenol	ug/L	40		10 U 10			5	U	5	5	U	5	10 U 10			4.8	U	4.8
2-Methylnaphthalene	ug/L	NS		10 U 10			5	U	5	5	U	5	10 U 10			4.8	U	4.8
2-Methylphenol	ug/L	NS		10 U 10			5	U	5	5	U	5	10 U 10			4.8	U	4.8
2-Nitroaniline	ug/L	NS		25 U 25			10	U	10	10	U	10	25 U 25			9.5	U	9.5
2-Nitrophenol	ug/L	NS		10 U 10			5	U	5	5	U	5	10 U 10			4.8	U	4.8
3,3'-Dichlorobenzidine	ug/L	30		10 U 10			5	U	5	5	U	5	10 U 10			4.8	U	4.8
3-Nitroaniline	ug/L	NS		25 U 25			10	U	10	10	U	10	25 U 25			9.5	U	9.5
4,6-Dinitro-2-methylphenol	ug/L	NS		25 U 25			10	U	10	10	U	10	25 U 25			9.5	U	9.5
4-Bromophenyl Phenyl Ether	ug/L	NS		10 U 10			5	U	5	5	U	5	10 U 10			4.8	U	4.8
4-Chloro-3-methylphenol	ug/L	NS		10 U 10			5	U	5	5	U	5	10 U 10			4.8	U	4.8
4-Chloroaniline	ug/L	30		10 U 10			5	U	5	5	U	5	10 U 10			4.8	U	4.8
4-Chlorophenyl-phenylether	ug/L	NS		10 U 10			5	U	5	5	U	5	10 U 10			4.8	U	4.8
4-Methylphenol	ug/L	NS		10 U 10			5	U	5	5	U	5	10 U 10			4.8	U	4.8
4-Nitroaniline	ug/L	NS		25 U 25			10	U	10	10	U	10	25 U 25			9.5	U	9.5
4-Nitrophenol	ug/L	NS		25 U 25			10	U	10	10	U	10	25 U 25			9.5	U	9.5
Acenaphthene	ug/L	400		10 U 10			5	U	5	5	U	5	10 U 10			4.8	U	4.8
Acenaphthylene	ug/L	NS		10 U 10			5	U	5	5	U	5	10 U 10			4.8	U	4.8
Acetophenone	ug/L	700		NDR			5	U	5	5	U	5	NDR			4.8	U	4.8
Anthracene	ug/L	2000		10 U 10			5	U	5	5	U	5	10 U 10			4.8	U	4.8
Atrazine	ug/L	3		NDR			5	U	5	5	U	5	NDR			4.8	U	4.8

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
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Sample ID sys_sample_code Sample Date N=Normal, FD=Field Duplicate start_depth			MW-28R MW-28R N6/28/2007 13308	MW-5D MW-5D 12/21/2009	MW-5D MW-5D FD-0912178-16	MW-5D MW-5D N7/5/2007 13331	MW-5D MW-5D_12022010	MW-5D MW-5D-1590716									
Parameter	Unit ug/L	NJDEP GWQC NS	Result NDR	Qual U	QL 5	Result 5	Qual U	QL 5	Result NDR	Qual U	QL 4.8	Result 4.8	Qual U	QL 4.8	Result NDR	Qual U	QL 4.8
Benzaldehyde																	
Benzo[a]anthracene	ug/L	0.1	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Benzo[a]pyrene	ug/L	0.1	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Benzo[b]fluoranthene	ug/L	0.2	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Benzo[g,h,i]perylene	ug/L	NS	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Benzo[k]fluoranthene	ug/L	0.5	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Biphenyl	ug/L	400	NDR			5	U	5	5	U	5	NDR			4.8	U	4.8
Bis(2-chloroethoxy)methane	ug/L	NS	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Bis(2-chloroethyl) Ether	ug/L	7	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Bis(2-chloroisopropyl) Ether	ug/L	300	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Bis(2-ethylhexyl) Phthalate	ug/L	3	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Butylbenzyl Phthalate	ug/L	100	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Caprolactum	ug/L	NS	NDR			5	U	5	5	U	5	NDR			4.8	U	4.8
Carbazole	ug/L	NS	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Chrysene	ug/L	5	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Dibenzo[a,h]anthracene	ug/L	0.3	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Dibenzofuran	ug/L	NS	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Diethyl Phthalate	ug/L	6000	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Dimethyl Phthalate	ug/L	NS	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Di-n-Butyl Phthalate	ug/L	700	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Di-n-octyl Phthalate	ug/L	100	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Fluoranthene	ug/L	300	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Fluorene	ug/L	300	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Hexachlorobenzene	ug/L	0.02	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Hexachlorobutadiene	ug/L	1	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Hexachlorocyclopentadiene	ug/L	40	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Hexachloroethane	ug/L	7	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Indeno[1,2,3-cd]pyrene	ug/L	0.2	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Isophorone	ug/L	40	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Naphthalene	ug/L	300	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Nitrobenzene	ug/L	6	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
N-Nitroso-di-n-propylamine	ug/L	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
N-Nitrosodiphenylamine	ug/L	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Pentachlorophenol	ug/L	0.3	25	U	25	10	U	10	10	U	10	25	U	25	9.5	U	9.5
Phenanthrene	ug/L	NS	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Phenol	ug/L	2000	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Pyrene	ug/L	200	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8
Volatile Organic Compounds																	
1,1,1-Trichloroethane	ug/L	30	0.5	U	0.5	9.1	0.5	8.5	0.5	20	J	0.5	11	0.5	14	0.5	
1,1,2,2-Tetrachloroethane	ug/L	2	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,1,2-Trichloroethane	ug/L	3	0.5	U	0.5	0.81	0.5	0.78	0.5	0.92	0.5	0.87	0.5	1.1	0.5		
1,1-Dichloroethane	ug/L	70	0.5	U	0.5	34	J	100	33	J	100	36	J	0.5	26	J	130
1,1-Dichloroethene	ug/L	2	0.5	U	0.5	180		100	200		100	230	J	0.5	160	130	200
1,2,3-Trichlorobenzene	ug/L	NS	NDR			0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5
1,2,4-Trichlorobenzene	ug/L	9	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	77	J	0.5	0.5	U	0.5
1,2-Dibromo-3-chloropropane	ug/L	0.02	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5

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			Sample ID sys_sample_code	MW-28R MW-28R N6/28/2007 13308	MW-5D MW-5D 12/21/2009	MW-5D MW-5D FD-0912178-16	MW-5D MW-5D N7/5/2007 13331	MW-5D MW-5D_12022010	MW-5D MW-5D-1590716
			Sample Date N=Normal, FD=Field Duplicate start_depth	6/28/2007 N	12/21/2009 N	12/21/2009 FD	7/5/2007 N	12/2/2010 N	8/6/2008 N
Parameter	Unit	NJDEP GWQC							
1,2-Dibromoethane	ug/L	0.03		Result 0.5 Qual U QL 0.5	Result 0.5 Qual U QL 0.5	Result 0.5 Qual U QL 0.5	Result 0.5 Qual U QL 0.5	Result 0.5 Qual U QL 0.5	Result 0.5 Qual U QL 0.5
1,2-Dichlorobenzene	ug/L	600		0.5 U 0.5	2.7 0.5	2.7 0.5	3.8 0.5	5 0.5	3.5 0.5
1,2-Dichloroethane	ug/L	2		0.5 U 0.5	58 J 0.5	56 J 0.5	84 J 0.5	64 J 130	120 100
1,2-Dichloropropane	ug/L	1		0.5 U 0.5	0.96 0.5	0.95 0.5	1.1 0.5	1.1 0.5	1.1 0.5
1,3-Dichlorobenzene	ug/L	600		0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5
1,4-Dichlorobenzene	ug/L	75		0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5
1,4-Dioxane	ug/L	NS		1.8 J 2	NDR	NDR	3.7 2	NDR	NDR
2-Butanone	ug/L	300		5 U 5	5 U 5	5 U 5	5 U 5	5 U 5	5 U 5
2-Hexanone	ug/L	NS		5 U 5	5 U 5	5 U 5	5 U 5	5 U 5	5 U 5
4-Methyl-2-pentanone	ug/L	NS		5 U 5	5 U 5	5 U 5	5 U 5	5 U 5	5 U 5
Acetone	ug/L	6000		5 U 5	5 U 5	5 U 5	5 U 5	2.8 J 5	17 U 17
Benzene	ug/L	1		0.5 U 0.5	12 0.5	11 0.5	15 0.5	13 0.5	13 0.5
Bromochloromethane	ug/L	NS		NDR	0.5 U 0.5	0.5 U 0.5		0.5 U 0.5	NDR
Bromodichloromethane	ug/L	1		0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5
Bromoform	ug/L	4		0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5
Bromomethane	ug/L	10		0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5
Carbon Disulfide	ug/L	700		0.15 J 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5
Carbon Tetrachloride	ug/L	2		0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5
Chlorobenzene	ug/L	4		0.5 U 0.5	16 0.5	16 0.5	23 0.5	21 J 130	20 0.5
Chloroethane	ug/L	NS		0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5
Chloroform	ug/L	6		0.5 U 0.5	180 100	170 100	200 J 0.5	150 130	230 U 230
Chloromethane	ug/L	NS		0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5
cis-1,2-Dichloroethene	ug/L	10		0.16 J 0.5	900 100	900 100	830 0.5	710 130	910 100
cis-1,3-Dichloropropene	ug/L	NS		0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5
Cyclohexane	ug/L	NS		0.5 U 0.5	0.77 0.5	0.73 0.5	0.5 U 0.5	1.1 0.5	0.78 0.5
Dibromochloromethane	ug/L	10		0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5
Dichlorodifluoromethane	ug/L	1000		0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	1.1 0.5	0.35 J 0.5	0.5 U 0.5
Ethylbenzene	ug/L	700		0.5 U 0.5	1.4 0.5	1.5 0.5	3 0.5	6.4 0.5	1.8 0.5
Freon 113	ug/L	NS		0.5 U 0.5	58 J 0.5	100 U 100	210 J 0.5	110 J 0.5	100 100
Isopropylbenzene	ug/L	700		0.5 U 0.5	0.39 J 0.5	0.39 J 0.5	0.56 0.5	0.61 0.5	0.41 J 0.5
m,p-Xylenes	ug/L	NS		NDR	0.28 J 0.5	0.28 J 0.5	NDR	0.21 J 0.5	NDR
Methyl Acetate	ug/L	7000		0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5
Methyl Cyclohexane	ug/L	NS		0.5 U 0.5	1 0.5	1 0.5	1.2 0.5	0.5 U 0.5	0.81 0.5
Methyl tert-Butyl Ether	ug/L	70		0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5
Methylene Chloride	ug/L	2		0.5 U 0.5	0.18 J 0.5	0.17 J 0.5	0.5 U 0.5	0.45 J 0.5	0.62 U 0.62
o-Xylene	ug/L	NS		NDR	4.4	4.5	0.5	12	0.5
Styrene	ug/L	100		0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5
Tetrachloroethene	ug/L	1		0.5 U 0.5	780 100	700 100	980 0.5	1000 130	920 100
Toluene	ug/L	600		0.5 U 0.5	0.78 0.5	0.77 0.5	0.5 U 0.5	3.5 0.5	0.52 U 0.52
trans-1,2-Dichloroethene	ug/L	100		0.5 UJ 0.5	4.8 J 0.5	3.7 J 0.5	2 J 0.5	1.8 0.5	2.4 J 0.5
trans-1,3-Dichloropropene	ug/L	NS		0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5	0.5 U 0.5
Trichloroethene	ug/L	1		0.5 U 0.5	2400 100	2200 100	3400 0.5	3100 130	3600 100
Trichlorofluoromethane	ug/L	2000		0.5 U 0.5	1.3 0.5	1.2 0.5	1.4 J 0.5	1.1 0.5	0.94 0.5
Vinyl Chloride	ug/L	5		0.5 U 0.5	53 J 0.5	51 J 0.5	150 J 0.5	59 J 0.5	100 U 100
Xylenes, Total	ug/L	40		0.5 U 0.5	NDR	NDR	7.2 0.5	NDR	9.6 1.5

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code Sample Date N=Normal, FD=Field Duplicate start_depth			MW-28R MW-28R N6/28/2007 13308 6/28/2007 N	MW-5D MW-5D 12/21/2009 12/21/2009 N	MW-5D MW-5D FD-0912178-16 12/21/2009 FD	MW-5D MW-5D N7/5/2007 13331 7/5/2007 N	MW-5D MW-5D_12022010 12/2/2010 N	MW-5D MW-5D-1590716 8/6/2008 N									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Biodegradation Indicator Gases																	
Ethane	ug/L	NS	1.1	0.025	NDR	NDR	2.2	0.025	NDR	NDR	NDR						
Ethene	ug/L	NS	0.36	0.025	NDR	NDR	20	0.025	NDR	NDR	NDR						
Methane	ug/L	NS	82	0.1	NDR	NDR	150	0.1	NDR	NDR	NDR						

Notes:

ug/L = micrograms per liter

Qual = validated qualifier

QL = Quantitation Limit

NDR = no data reported

NS = no standard available

Qualifiers:

J - Result or reporting limit is estimated.

U - Result was not detected at or
above the method detection limit.

R - Result was rejected.

* NJDEP GWQC: Higher of the Practical Quantitation Limit
and Ground Water Quality Criterion (N.J.A.C. 7:9C) 07/2010,
as well as Interim Groundwater Quality Criteria.

Inorganic results from MW-21R sampled in December 2009
were unfiltered grab samples collected for Bench Testing
and were not used in the Risk Assessment

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-5D MW-5DFD FD7/5/2007 13331	MW-7D MW-7D N7/5/2007 13331	MW-7D MW-7D-1590715	MW-8R MW-8R N6/27/2007 13288	MW-8R MW-8R-0912109-14	RMW-11D RMW-11D 12/18/2009									
Sample Date N=Normal, FD=Field Duplicate start_depth			7/5/2007 FD	7/5/2007 N	8/6/2008 N	6/27/2007 N	12/17/2009 N	12/18/2009 N									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Inorganics																	
Aluminum	ug/L	200	NDR	200	U	200	200	UJ	200	NDR	NDR	267	J	200			
Antimony	ug/L	6	NDR	60	U	60	60	UJ	60	NDR	NDR	2	U	2			
Arsenic	ug/L	3	NDR	10	U	10	10	UJ	10	NDR	NDR	0.24	J	1			
Barium	ug/L	6000	NDR	200	U	200	13.6	J	200	NDR	NDR	30.8	J	10			
Beryllium	ug/L	1	NDR	5	U	5	5	UJ	5	NDR	NDR	1	U	1			
Cadmium	ug/L	4	NDR	5	U	5	5	UJ	5	NDR	NDR	1	U	1			
Calcium	ug/L	NS	NDR	89300		5000	110000	J	5000	NDR	NDR	11900		5000			
Chromium	ug/L	70	NDR	10	U	10	10	UJ	10	NDR	NDR	17.7	J	2			
Cobalt	ug/L	NS	NDR	50	U	50	50	UJ	50	NDR	NDR	5.9		1			
Copper	ug/L	1300	NDR	25	U	25	25	UJ	25	NDR	NDR	4.5	J	2			
Iron	ug/L	300	NDR	100	U	100	100	UJ	100	NDR	NDR	599		100			
Lead	ug/L	5	NDR	3	U	3	3	UJ	3	NDR	NDR	1.5	J	1			
Magnesium	ug/L	NS	NDR	13300		5000	13000	J	5000	NDR	NDR	300	J	5000			
Manganese	ug/L	50	NDR	54.2		15	89.8	J	15	NDR	NDR	30		1			
Mercury	ug/L	2	NDR	0.2	U	0.2	0.2	UJ	0.2	NDR	NDR	0.2	U	0.2			
Nickel	ug/L	100	NDR	40	U	40	40	UJ	40	NDR	NDR	15.5		1			
Potassium	ug/L	NS	NDR	5000	U	5000	5000	UJ	5000	NDR	NDR	14300	J	5000			
Selenium	ug/L	40	NDR	5	U	5	5	UJ	5	NDR	NDR	5	U	5			
Silver	ug/L	40	NDR	10	U	10	10	UJ	10	NDR	NDR	1	U	1			
Sodium	ug/L	50000	NDR	63700		5000	64900	J	5000	NDR	NDR	24600		5000			
Thallium	ug/L	2	NDR	10	U	10	10	UJ	10	NDR	NDR	1	U	1			
Vanadium	ug/L	NS	NDR	50	U	50	4.1	J	50	NDR	NDR	8.5		5			
Zinc	ug/L	2000	NDR	20	U	20	24.8	J	20	NDR	NDR	30.8	J	2			
PCBs																	
Aroclor 1016	ug/L	NS	1	U	1	1	U	1	1	UJ	1	NDR	NDR	1	U	1	
Aroclor 1221	ug/L	NS	2	U	2	2	U	2	2	UJ	2	NDR	NDR	1	U	1	
Aroclor 1232	ug/L	NS	1	U	1	1	U	1	1	UJ	1	NDR	NDR	1	U	1	
Aroclor 1242	ug/L	NS	1	U	1	1	U	1	1	UJ	1	NDR	NDR	1	U	1	
Aroclor 1248	ug/L	NS	1	U	1	1	U	1	1	UJ	1	NDR	NDR	1	U	1	
Aroclor 1254	ug/L	NS	1	U	1	1	U	1	1	UJ	1	NDR	NDR	1	U	1	
Aroclor 1260	ug/L	NS	1	U	1	1	U	1	1	UJ	1	NDR	NDR	1	U	1	
Aroclor 1262	ug/L	NS	NDR		NDR		NDR		NDR		NDR	NDR	1	U	1		
Aroclor 1268	ug/L	NS	NDR		NDR		NDR		NDR		NDR	NDR	1	U	1		
Pesticides																	
4,4-DDD	ug/L	0.1	0.1	U	0.1	0.1	U	0.1	0.1	UJ	0.1	NDR	NDR	0.1	U	0.1	
4,4-DDE	ug/L	0.1	0.1	U	0.1	0.1	U	0.1	0.1	UJ	0.1	NDR	NDR	0.1	U	0.1	
4,4-DDT	ug/L	0.1	0.1	U	0.1	0.1	U	0.1	0.1	UJ	0.1	NDR	NDR	0.1	U	0.1	
Aldrin	ug/L	0.04	0.05	U	0.05	0.05	U	0.05	0.05	UJ	0.05	NDR	NDR	0.05	U	0.05	
alpha-BHC	ug/L	0.02	0.05	U	0.05	0.05	U	0.05	0.05	UJ	0.05	NDR	NDR	0.05	U	0.05	
alpha-Chlordane	ug/L	NS	0.05	U	0.05	0.05	U	0.05	0.05	UJ	0.05	NDR	NDR	0.05	U	0.05	
alpha-Endosulfan	ug/L	40	0.05	U	0.05	0.05	U	0.05	0.05	UJ	0.05	NDR	NDR	0.05	U	0.05	

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-5D MW-5DFD FD7/5/2007 13331	MW-7D MW-7D N7/5/2007 13331	MW-7D MW-7D-1590715	MW-8R MW-8R N6/27/2007 13288	MW-8R MW-8R-0912109-14	RMW-11D RMW-11D 12/18/2009
Sample Date N=Normal, FD=Field Duplicate start_depth			7/5/2007 FD	7/5/2007 N	8/6/2008 N	6/27/2007 N	12/17/2009 N	12/18/2009 N
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL
beta-BHC	ug/L	0.04	0.05	U	0.05	0.05	U	0.05
beta-Endosulfan	ug/L	40	0.1	U	0.1	0.1	U	0.1
delta-BHC	ug/L	NS	0.05	U	0.05	0.05	U	0.05
Dieldrin	ug/L	0.03	0.1	U	0.1	0.1	U	0.1
Endosulfan Sulfate	ug/L	40	0.1	U	0.1	0.1	U	0.1
Endrin	ug/L	2	0.1	U	0.1	0.1	U	0.1
Endrin Aldehyde	ug/L	NS	0.1	U	0.1	0.1	U	0.1
Endrin Ketone	ug/L	NS	0.1	U	0.1	0.1	U	0.1
gamma-BHC	ug/L	0.03	0.05	U	0.05	0.05	U	0.05
Heptachlor	ug/L	0.05	0.05	U	0.05	0.05	U	0.05
Heptachlor Epoxide	ug/L	0.2	0.05	U	0.05	0.05	U	0.05
Methoxychlor	ug/L	40	0.5	U	0.5	0.5	U	0.5
Toxaphene	ug/L	2	5	U	5	5	U	5
trans-Chlordane	ug/L	NS	0.05	U	0.05	0.05	U	0.05
Semivolatile Organic Compounds								
1,2,4,5-Tetrachlorobenzene	ug/L	NS	NDR		NDR		NDR	5 U 5
2,3,4,6-Tetrachlorophenol	ug/L	200	NDR		NDR		NDR	5 U 5
2,4,5-Trichlorophenol	ug/L	700	25 U 25	25 U 25	25 UJ 25	25 U 25	NDR	5 U 5
2,4,6-Trichlorophenol	ug/L	20	10 U 10	10 U 10	10 UJ 10	10 U 10	NDR	5 U 5
2,4-Dichlorophenol	ug/L	20	10 U 10	10 U 10	10 UJ 10	10 U 10	NDR	5 U 5
2,4-Dimethylphenol	ug/L	100	10 U 10	10 U 10	10 UJ 10	10 U 10	NDR	5 U 5
2,4-Dinitrophenol	ug/L	40	25 U 25	25 U 25	25 UJ 25	25 U 25	NDR	10 U 10
2,4-Dinitrotoluene	ug/L	NS	10 U 10	10 U 10	10 UJ 10	10 U 10	NDR	5 U 5
2,6-Dinitrotoluene	ug/L	NS	10 U 10	10 U 10	10 UJ 10	10 U 10	NDR	5 U 5
2-Chloronaphthalene	ug/L	600	10 U 10	10 U 10	10 UJ 10	10 U 10	NDR	5 U 5
2-Chlorophenol	ug/L	40	10 U 10	10 U 10	10 UJ 10	10 U 10	NDR	5 U 5
2-Methylnaphthalene	ug/L	NS	10 U 10	10 U 10	10 UJ 10	10 U 10	NDR	5 U 5
2-Methylphenol	ug/L	NS	10 U 10	10 U 10	10 UJ 10	10 U 10	NDR	5 U 5
2-Nitroaniline	ug/L	NS	25 U 25	25 U 25	25 UJ 25	25 U 25	NDR	10 U 10
2-Nitrophenol	ug/L	NS	10 U 10	10 U 10	10 UJ 10	10 U 10	NDR	5 U 5
3,3'-Dichlorobenzidine	ug/L	30	10 U 10	10 U 10	10 UJ 10	10 U 10	NDR	5 U 5
3-Nitroaniline	ug/L	NS	25 U 25	25 U 25	25 UJ 25	25 U 25	NDR	10 U 10
4,6-Dinitro-2-methylphenol	ug/L	NS	25 U 25	25 U 25	25 UJ 25	25 U 25	NDR	10 U 10
4-Bromophenyl Phenyl Ether	ug/L	NS	10 U 10	10 U 10	10 UJ 10	10 U 10	NDR	5 U 5
4-Chloro-3-methylphenol	ug/L	NS	10 U 10	10 U 10	10 UJ 10	10 U 10	NDR	5 U 5
4-Chloroaniline	ug/L	30	10 U 10	10 U 10	10 UJ 10	10 U 10	NDR	5 U 5
4-Chlorophenyl-phenylether	ug/L	NS	10 U 10	10 U 10	10 UJ 10	10 U 10	NDR	5 U 5
4-Methylphenol	ug/L	NS	10 U 10	10 U 10	10 UJ 10	10 U 10	NDR	5 U 5
4-Nitroaniline	ug/L	NS	25 U 25	25 U 25	25 UJ 25	25 U 25	NDR	10 U 10
4-Nitrophenol	ug/L	NS	25 U 25	25 U 25	25 UJ 25	25 U 25	NDR	10 U 10
Acenaphthene	ug/L	400	10 U 10	10 U 10	10 UJ 10	10 U 10	NDR	5 U 5
Acenaphthylene	ug/L	NS	10 U 10	10 U 10	10 UJ 10	10 U 10	NDR	5 U 5
Acetophenone	ug/L	700	NDR		NDR		NDR	5 U 5
Anthracene	ug/L	2000	10 U 10	10 U 10	10 UJ 10	10 U 10	NDR	5 U 5
Atrazine	ug/L	3	NDR		NDR		NDR	5 U 5

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-5D MW-5DFD FD7/5/2007 13331	MW-7D MW-7D N7/5/2007 13331	MW-7D MW-7D-1590715	MW-8R MW-8R N6/27/2007 13288	MW-8R MW-8R-0912109-14	RMW-11D RMW-11D 12/18/2009											
Sample Date N=Normal, FD=Field Duplicate start_depth			7/5/2007 FD	7/5/2007 N	8/6/2008 N	6/27/2007 N	12/17/2009 N	12/18/2009 N											
Parameter	Unit ug/L	NJDEP GWQC NS	Result NDR	Qual U	QL 10	Result NDR	Qual U	QL 10	Result NDR	Qual U	QL 10	Result NDR	Qual U	QL 5	Result U	Qual 5	QL 5		
Benzaldehyde																			
Benzo[a]anthracene	ug/L	0.1	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Benzo[a]pyrene	ug/L	0.1	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Benzo[b]fluoranthene	ug/L	0.2	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Benzo[g,h,i]perylene	ug/L	NS	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Benzo[k]fluoranthene	ug/L	0.5	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Biphenyl	ug/L	400	NDR			NDR			NDR			NDR			NDR	5	U	5	
Bis(2-chloroethoxy)methane	ug/L	NS	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Bis(2-chloroethyl) Ether	ug/L	7	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Bis(2-chloroisopropyl) Ether	ug/L	300	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Bis(2-ethylhexyl) Phthalate	ug/L	3	10	U	10	10	U	10	10	UJ	10	7	J	10	NDR	5	U	5	
Butylbenzyl Phthalate	ug/L	100	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Caprolactum	ug/L	NS	NDR			NDR			NDR			NDR			NDR	5	U	5	
Carbazole	ug/L	NS	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Chrysene	ug/L	5	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Dibenzo[a,h]anthracene	ug/L	0.3	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Dibenzofuran	ug/L	NS	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Diethyl Phthalate	ug/L	6000	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Dimethyl Phthalate	ug/L	NS	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Di-n-Butyl Phthalate	ug/L	700	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Di-n-octyl Phthalate	ug/L	100	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Fluoranthene	ug/L	300	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Fluorene	ug/L	300	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Hexachlorobenzene	ug/L	0.02	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Hexachlorobutadiene	ug/L	1	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Hexachlorocyclopentadiene	ug/L	40	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Hexachloroethane	ug/L	7	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Indeno[1,2,3-cd]pyrene	ug/L	0.2	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Isophorone	ug/L	40	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Naphthalene	ug/L	300	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Nitrobenzene	ug/L	6	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
N-Nitroso-di-n-propylamine	ug/L	10	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
N-Nitrosodiphenylamine	ug/L	10	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Pentachlorophenol	ug/L	0.3	25	U	25	25	U	25	25	UJ	25	25	U	25	NDR	10	U	10	
Phenanthrene	ug/L	NS	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Phenol	ug/L	2000	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Pyrene	ug/L	200	10	U	10	10	U	10	10	UJ	10	10	U	10	NDR	5	U	5	
Volatile Organic Compounds																			
1,1,1-Trichloroethane	ug/L	30	NDR			0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	
1,1,2,2-Tetrachloroethane	ug/L	2	NDR			0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	
1,1,2-Trichloroethane	ug/L	3	NDR			0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	
1,1-Dichloroethane	ug/L	70	NDR			0.13	J	0.5	0.15	J	0.5	1.3		0.5	0.93	0.5	0.13	J	0.5
1,1-Dichloroethene	ug/L	2	NDR			0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	
1,2,3-Trichlorobenzene	ug/L	NS	NDR												0.5	U	0.5	0.5	
1,2,4-Trichlorobenzene	ug/L	9	NDR			0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	
1,2-Dibromo-3-chloropropane	ug/L	0.02	NDR			0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-5D MW-5DFD FD7/5/2007 13331	MW-7D MW-7D N7/5/2007 13331	MW-7D MW-7D-1590715	MW-8R MW-8R N6/27/2007 13288	MW-8R MW-8R-0912109-14	RMW-11D RMW-11D 12/18/2009										
Sample Date N=Normal, FD=Field Duplicate start_depth			7/5/2007 FD	7/5/2007 N	8/6/2008 N	6/27/2007 N	12/17/2009 N	12/18/2009 N										
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	
1,2-Dibromoethane	ug/L	0.03	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,2-Dichlorobenzene	ug/L	600	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,2-Dichloroethane	ug/L	2	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.65	0.5	
1,2-Dichloropropane	ug/L	1	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,3-Dichlorobenzene	ug/L	600	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,4-Dichlorobenzene	ug/L	75	NDR	0.5	U	0.5	0.5	U	0.5	0.16	J	0.5	0.5	U	0.5	0.5	U	0.5
1,4-Dioxane	ug/L	NS	NDR										15		2			
2-Butanone	ug/L	300	NDR	5	U	5	5	U	5	5	U	5	5	U	5	5	U	5
2-Hexanone	ug/L	NS	NDR	5	U	5	5	U	5	5	U	5	5	U	5	5	U	5
4-Methyl-2-pentanone	ug/L	NS	NDR	5	U	5	5	U	5	5	U	5	5	U	5	5	U	5
Acetone	ug/L	6000	NDR	5	U	5	5	U	5	5	U	5	5	U	5	5.8	U	5.8
Benzene	ug/L	1	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Bromochloromethane	ug/L	NS	NDR				NDR			NDR			0.5	U	0.5	0.5	U	0.5
Bromodichloromethane	ug/L	1	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Bromoform	ug/L	4	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Bromomethane	ug/L	10	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Carbon Disulfide	ug/L	700	NDR	0.5	U	0.5	0.5	U	0.5	0.1	J	0.5	0.5	U	0.5	0.5	U	0.5
Carbon Tetrachloride	ug/L	2	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Chlorobenzene	ug/L	4	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Chloroethane	ug/L	NS	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Chloroform	ug/L	6	NDR	0.5	U	0.5	0.5	U	0.5	0.45	J	0.5	0.5	U	0.5	0.5	U	0.5
Chloromethane	ug/L	NS	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
cis-1,2-Dichloroethene	ug/L	10	NDR	0.5	U	0.5	0.5	U	0.5	0.19	J	0.5	0.5	U	0.5	0.76	U	0.5
cis-1,3-Dichloropropene	ug/L	NS	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Cyclohexane	ug/L	NS	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Dibromochloromethane	ug/L	10	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Dichlorodifluoromethane	ug/L	1000	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Ethylbenzene	ug/L	700	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Freon 113	ug/L	NS	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Isopropylbenzene	ug/L	700	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
m,p-Xylenes	ug/L	NS	NDR				NDR			NDR			0.5	U	0.5	0.5	U	0.5
Methyl Acetate	ug/L	7000	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Methyl Cyclohexane	ug/L	NS	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Methyl tert-Butyl Ether	ug/L	70	NDR	0.5	U	0.5	0.5	U	0.5	0.45	J	0.5	0.59		0.5	0.5	U	0.5
Methylene Chloride	ug/L	2	NDR	0.5	U	0.5	1	U	1	0.5	U	0.5	0.35	J	0.5	0.5	U	0.5
o-Xylene	ug/L	NS	NDR				NDR			NDR			0.5	U	0.5	0.5	U	0.5
Styrene	ug/L	100	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Tetrachloroethene	ug/L	1	NDR	0.62			0.55	0.5		0.5	U	0.5	0.5	U	0.5	1.1	U	0.5
Toluene	ug/L	600	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
trans-1,2-Dichloroethene	ug/L	100	NDR	0.5	U	0.5	0.5	U	0.5	0.5	UJ	0.5	0.5	U	0.5	0.5	U	0.5
trans-1,3-Dichloropropene	ug/L	NS	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Trichloroethene	ug/L	1	NDR	3.7			6	U	6	0.12	J	0.5	0.5	U	0.5	1.8	U	0.5
Trichlorofluoromethane	ug/L	2000	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Vinyl Chloride	ug/L	5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
Xylenes, Total	ug/L	40	NDR	0.5	U	0.5	1.5	U	1.5	0.5	U	0.5						

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			MW-5D MW-5DFD FD7/5/2007 13331	MW-7D MW-7D N7/5/2007 13331	MW-7D MW-7D-1590715	MW-8R MW-8R N6/27/2007 13288	MW-8R MW-8R-0912109-14	RMW-11D RMW-11D 12/18/2009									
Sample Date N=Normal, FD=Field Duplicate start_depth			7/5/2007 FD	7/5/2007 N	8/6/2008 N	6/27/2007 N	12/17/2009 N	12/18/2009 N									
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Biodegradation Indicator Gases																	
Ethane	ug/L	NS	NDR	0.021	J	0.025		1	0.025	NDR		NDR		NDR		NDR	
Ethene	ug/L	NS	NDR	0.027		0.025		0.019	J	0.025	NDR		NDR		NDR		NDR
Methane	ug/L	NS	NDR	6.2		0.1		94		0.1	NDR		NDR		NDR		NDR

Notes:

ug/L = micrograms per liter

Qual = validated qualifier

QL = Quantitation Limit

NDR = no data reported

NS = no standard available

Qualifiers:

J - Result or reporting limit is estimated.

U - Result was not detected at or
above the method detection limit.

R - Result was rejected.

* NJDEP GWQC: Higher of the Practical Quantitation Limit
and Ground Water Quality Criterion (N.J.A.C. 7:9C) 07/2010,
as well as Interim Groundwater Quality Criteria.

Inorganic results from MW-21R sampled in December 2009
were unfiltered grab samples collected for Bench Testing
and were not used in the Risk Assessment

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			RMW-11D RMW-11D N7/2/2007 13308			RMW-11D RMW-11D_11302010			RMW-11D RMW-11D_12082010			RMW-11D RMW-11D-1590707			RMW-12D MW-12D 12/18/2009			RMW-12D MW-12D N6/29/2007 13308			
Sample Date N=Normal, FD=Field Duplicate start_depth			7/2/2007 N			11/30/2010 N			12/8/2010 N			8/5/2008 N			12/18/2009 N			6/29/2007 N			
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	
Inorganics																					
Aluminum	ug/L	200	200	U	200	NDR	375	200	246	200	495	200	400	200	400	200	400	200	400	200	
Antimony	ug/L	6	60	U	60	NDR	2	U	2	60	U	60	2	U	2	60	U	60	2	U	2
Arsenic	ug/L	3	10	U	10	NDR	1	U	1	10	U	10	0.53	J	1	10	U	10	5	U	5
Barium	ug/L	6000	200	U	200	NDR	28.9	J	10	18.6	J	200	31.6	J	10	200	U	200	200	U	200
Beryllium	ug/L	1	5	U	5	NDR	1	U	1	5	U	5	1	U	1	5	U	5	5	U	5
Cadmium	ug/L	4	5	U	5	NDR	1	U	1	5	U	5	1	U	1	5	U	5	5	U	5
Calcium	ug/L	NS	8270	J	5000	NDR	11500	5000	7550	5000	31200	5000	31500	5000	31500	5000	31500	5000	31500	5000	
Chromium	ug/L	70	11.8		10	NDR	41.5	J	2	27.2		10	34.1	J	2	12.5		10			
Cobalt	ug/L	NS	50	U	50	NDR	1	U	1	50	U	50	1.3	J	1	50	U	50	50	U	50
Copper	ug/L	1300	25	U	25	NDR	7.1	J	2	25	U	25	18.1	J	2	25	U	25	25	U	25
Iron	ug/L	300	261	J	100	NDR	834		100	543		100	1010		100	919	J	100	919	J	100
Lead	ug/L	5	3	U	3	NDR	2	J	1	3	U	3	2.4	J	1	3	U	3	3	U	3
Magnesium	ug/L	NS	5000	U	5000	NDR	917	J	5000	5000	U	5000	3420	J	5000	5000	U	5000	5000	U	5000
Manganese	ug/L	50	15	U	15	NDR	28.7	J	1	21.5	J	15	48.9		1	31.9	J	15			
Mercury	ug/L	2	0.2	U	0.2	NDR	0.2	U	0.2	0.2	U	0.2	0.2	U	0.2	0.2	U	0.2	0.2	U	0.2
Nickel	ug/L	100	40	U	40	NDR	24.3	J	1	17.5	J	40	50.4		1	40	U	40	40	U	40
Potassium	ug/L	NS	13600	J	5000	NDR	12900	J	5000	13800	J	5000	6230	J	5000	6400	J	5000	6400	J	5000
Selenium	ug/L	40	5	U	5	NDR	5	U	5	5	U	5	5	U	5	5	U	5	5	U	5
Silver	ug/L	40	10	U	10	NDR	1	U	1	10	U	10	1	U	1	10	U	10	10	U	10
Sodium	ug/L	50000	20200		5000	NDR	25100		5000	24500		5000	6560		5000	14900		5000			
Thallium	ug/L	2	10	U	10	NDR	1	U	1	10	U	10	1	U	1	10	U	10	10	U	10
Vanadium	ug/L	NS	50	U	50	NDR	5	R	5	7.6	J	50	5	U	5	50	U	50	50	U	50
Zinc	ug/L	2000	20	U	20	NDR	32.6	J	2	20	U	20	72.9	J	2	30.7		20			
PCBs																					
Aroclor 1016	ug/L	NS	1	U	1	NDR	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
Aroclor 1221	ug/L	NS	2	U	2	NDR	1	U	1	2	U	2	1	U	1	2	U	2			
Aroclor 1232	ug/L	NS	1	U	1	NDR	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
Aroclor 1242	ug/L	NS	1	U	1	NDR	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
Aroclor 1248	ug/L	NS	1	U	1	NDR	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
Aroclor 1254	ug/L	NS	1	U	1	NDR	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
Aroclor 1260	ug/L	NS	1	U	1	NDR	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
Aroclor 1262	ug/L	NS	NDR			NDR	1	U	1	NDR			1	U	1	NDR			1	U	1
Aroclor 1268	ug/L	NS	NDR			NDR	1	U	1	NDR			1	U	1	NDR			1	U	1
Pesticides																					
4,4-DDD	ug/L	0.1	0.1	U	0.1	NDR	0.1	U	0.1	0.1	U	0.1	0.11	U	0.11	0.1	U	0.1	0.1	U	0.1
4,4-DDE	ug/L	0.1	0.1	U	0.1	NDR	0.1	U	0.1	0.1	U	0.1	0.11	U	0.11	0.1	U	0.1	0.1	U	0.1
4,4-DDT	ug/L	0.1	0.1	U	0.1	NDR	0.1	U	0.1	0.1	U	0.1	0.11	U	0.11	0.1	U	0.1	0.1	U	0.1
Aldrin	ug/L	0.04	0.05	U	0.05	NDR	0.05	U	0.05	0.05	U										

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code Sample Date N=Normal, FD=Field Duplicate start_depth			RMW-11D RMW-11D N7/2/2007 13308 7/2/2007 N	RMW-11D RMW-11D_11302010 11/30/2010 N	RMW-11D RMW-11D_12082010 12/8/2010 N	RMW-11D RMW-11D-1590707 8/5/2008 N	RMW-12D MW-12D 12/18/2009 12/18/2009 N	RMW-12D MW-12D N6/29/2007 13308 6/29/2007 N										
Parameter	Unit	NJDEP GWQC	Result 0.04	Qual 0.05	QL U 0.05	Result NDR	Qual 0.05	QL U 0.05	Result 0.05	Qual U	QL 0.05	Result 0.054	Qual U	QL 0.054	Result 0.05	Qual U	QL 0.05	
beta-BHC	ug/L	40	0.1	U	0.1	NDR	0.1	U	0.1	0.1	U	0.1	0.11	U	0.11	0.1	U	0.1
beta-Endosulfan	ug/L	NS	0.05	U	0.05	NDR	0.05	U	0.05	0.05	U	0.05	0.054	U	0.054	0.05	U	0.05
delta-BHC	ug/L	0.03	0.1	U	0.1	NDR	0.1	U	0.1	0.1	U	0.1	0.11	U	0.11	0.1	U	0.1
Dieldrin	ug/L	40	0.1	U	0.1	NDR	0.1	U	0.1	0.1	U	0.1	0.11	U	0.11	0.1	U	0.1
Endosulfan Sulfate	ug/L	2	0.1	U	0.1	NDR	0.1	U	0.1	0.1	U	0.1	0.11	U	0.11	0.1	U	0.1
Endrin	ug/L	NS	0.1	U	0.1	NDR	0.1	U	0.1	0.1	U	0.1	0.11	U	0.11	0.1	U	0.1
Endrin Aldehyde	ug/L	NS	0.1	U	0.1	NDR	0.1	U	0.1	0.1	U	0.1	0.11	U	0.11	0.1	U	0.1
Endrin Ketone	ug/L	NS	0.1	U	0.1	NDR	0.1	U	0.1	0.1	U	0.1	0.11	U	0.11	0.1	U	0.1
gamma-BHC	ug/L	0.03	0.05	U	0.05	NDR	0.05	U	0.05	0.05	U	0.05	0.054	U	0.054	0.05	U	0.05
Heptachlor	ug/L	0.05	0.05	U	0.05	NDR	0.05	U	0.05	0.05	U	0.05	0.054	U	0.054	0.05	U	0.05
Heptachlor Epoxide	ug/L	0.2	0.05	U	0.05	NDR	0.05	U	0.05	0.05	U	0.05	0.054	U	0.054	0.05	U	0.05
Methoxychlor	ug/L	40	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.54	U	0.54	0.5	U	0.5
Toxaphene	ug/L	2	5	U	5	NDR	5	U	5	5	U	5	5.4	U	5.4	5	U	5
trans-Chlordane	ug/L	NS	0.05	U	0.05	NDR	0.05	U	0.05	0.05	U	0.05	0.054	U	0.054	0.05	U	0.05
Semivolatile Organic Compounds																		
1,2,4,5-Tetrachlorobenzene	ug/L	NS	NDR			NDR	4.8	U	4.8	NDR			5.4	U	5.4	NDR		
2,3,4,6-Tetrachlorophenol	ug/L	200	NDR			NDR	4.8	U	4.8	NDR			5.4	U	5.4	NDR		
2,4,5-Trichlorophenol	ug/L	700	25	U	25	NDR	4.8	U	4.8	25	U	25	5.4	U	5.4	25	U	25
2,4,6-Trichlorophenol	ug/L	20	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
2,4-Dichlorophenol	ug/L	20	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
2,4-Dimethylphenol	ug/L	100	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
2,4-Dinitrophenol	ug/L	40	25	U	25	NDR	9.5	U	9.5	25	U	25	11	U	11	25	U	25
2,4-Dinitrotoluene	ug/L	NS	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
2,6-Dinitrotoluene	ug/L	NS	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
2-Chloronaphthalene	ug/L	600	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
2-Chlorophenol	ug/L	40	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
2-Methylnaphthalene	ug/L	NS	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
2-Methylphenol	ug/L	NS	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
2-Nitroaniline	ug/L	NS	25	U	25	NDR	9.5	U	9.5	25	U	25	11	U	11	25	U	25
2-Nitrophenol	ug/L	NS	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
3,3'-Dichlorobenzidine	ug/L	30	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
3-Nitroaniline	ug/L	NS	25	U	25	NDR	9.5	U	9.5	25	U	25	11	U	11	25	U	25
4,6-Dinitro-2-methylphenol	ug/L	NS	25	U	25	NDR	9.5	U	9.5	25	U	25	11	U	11	25	U	25
4-Bromophenyl Phenyl Ether	ug/L	NS	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
4-Chloro-3-methylphenol	ug/L	NS	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
4-Chloroaniline	ug/L	30	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
4-Chlorophenyl-phenylether	ug/L	NS	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
4-Methylphenol	ug/L	NS	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
4-Nitroaniline	ug/L	NS	25	U	25	NDR	9.5	U	9.5	25	U	25	11	U	11	25	U	25
4-Nitrophenol	ug/L	NS	25	U	25	NDR	9.5	U	9.5	25	U	25	11	U	11	25	U	25
Acenaphthene	ug/L	400	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Acenaphthylene	ug/L	NS	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Acetophenone	ug/L	700	NDR			NDR	4.8	U	4.8	NDR			5.4	U	5.4	NDR		
Anthracene	ug/L	2000	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Atrazine	ug/L	3	NDR			NDR	4.8	U	4.8	NDR			5.4	U	5.4			

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code Sample Date N=Normal, FD=Field Duplicate start_depth			RMW-11D RMW-11D N7/2/2007 13308 7/2/2007 N			RMW-11D RMW-11D_11302010 11/30/2010 N			RMW-11D RMW-11D_12082010 12/8/2010 N			RMW-11D RMW-11D-1590707 8/5/2008 N			RMW-12D MW-12D 12/18/2009 12/18/2009 N			
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	
Benzaldehyde	ug/L	NS	NDR			NDR	4.8	U	4.8	NDR	5.4	U	5.4	NDR				
Benzo[a]anthracene	ug/L	0.1	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Benzo[a]pyrene	ug/L	0.1	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Benzo[b]fluoranthene	ug/L	0.2	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Benzo[g,h,i]perylene	ug/L	NS	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Benzo[k]fluoranthene	ug/L	0.5	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Biphenyl	ug/L	400	NDR			NDR	4.8	U	4.8	NDR	5.4	U	5.4	NDR				
Bis(2-chloroethoxy)methane	ug/L	NS	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Bis(2-chloroethyl) Ether	ug/L	7	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Bis(2-chloroisopropyl) Ether	ug/L	300	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Bis(2-ethylhexyl) Phthalate	ug/L	3	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Butylbenzyl Phthalate	ug/L	100	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Caprolactum	ug/L	NS	NDR			NDR	4.8	U	4.8	NDR	5.4	U	5.4	NDR				
Carbazole	ug/L	NS	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Chrysene	ug/L	5	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Dibenzo[a,h]anthracene	ug/L	0.3	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Dibenzofuran	ug/L	NS	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Diethyl Phthalate	ug/L	6000	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Dimethyl Phthalate	ug/L	NS	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Di-n-Butyl Phthalate	ug/L	700	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Di-n-octyl Phthalate	ug/L	100	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Fluoranthene	ug/L	300	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Fluorene	ug/L	300	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Hexachlorobenzene	ug/L	0.02	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Hexachlorobutadiene	ug/L	1	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Hexachlorocyclopentadiene	ug/L	40	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Hexachloroethane	ug/L	7	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Indeno[1,2,3-cd]pyrene	ug/L	0.2	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Isophorone	ug/L	40	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Naphthalene	ug/L	300	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Nitrobenzene	ug/L	6	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
N-Nitroso-di-n-propylamine	ug/L	10	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
N-Nitrosodiphenylamine	ug/L	10	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Pentachlorophenol	ug/L	0.3	25	U	25	NDR	9.5	U	9.5	25	U	25	11	U	11	25	U	25
Phenanthrene	ug/L	NS	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Phenol	ug/L	2000	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Pyrene	ug/L	200	10	U	10	NDR	4.8	U	4.8	10	U	10	5.4	U	5.4	10	U	10
Volatile Organic Compounds																		
1,1,1-Trichloroethane	ug/L	30	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,1,2,2-Tetrachloroethane	ug/L	2	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,1,2-Trichloroethane	ug/L	3	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,1-Dichloroethane	ug/L	70	0.5	U	0.5	0.5	U	0.5	NDR	0.14	J	0.5	0.5	U	0.5	0.1	J	0.5
1,1-Dichloroethene	ug/L	2	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,2,3-Trichlorobenzene	ug/L	NS				0.5	U	0.5	NDR				0.5	U	0.5			
1,2,4-Trichlorobenzene	ug/L	9	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5
1,2-Dibromo-3-chloropropane	ug/L	0.02	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code Sample Date N=Normal, FD=Field Duplicate start_depth			RMW-11D RMW-11D N7/2/2007 13308 7/2/2007 N			RMW-11D RMW-11D_11302010 11/30/2010 N			RMW-11D RMW-11D_12082010 12/8/2010 N			RMW-11D RMW-11D-1590707 8/5/2008 N			RMW-12D MW-12D 12/18/2009 12/18/2009 N			RMW-12D MW-12D N6/29/2007 13308 6/29/2007 N				
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL		
1,2-Dibromoethane	ug/L	0.03	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
1,2-Dichlorobenzene	ug/L	600	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
1,2-Dichloroethane	ug/L	2	0.5	U	0.5	0.5	U	0.5	NDR	0.85	0.5	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
1,2-Dichloropropane	ug/L	1	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
1,3-Dichlorobenzene	ug/L	600	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
1,4-Dichlorobenzene	ug/L	75	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
1,4-Dioxane	ug/L	NS							NDR										1.2	J	2	
2-Butanone	ug/L	300	5	U	5	5	U	5	NDR	5	U	5	5	U	5	5	U	5	3.1	J	5	
2-Hexanone	ug/L	NS	5	UJ	5	5	U	5	NDR	5	U	5	5	U	5	5	U	5	5	U	5	
4-Methyl-2-pentanone	ug/L	NS	5	UJ	5	5	U	5	NDR	5	U	5	5	U	5	5	U	5	5	U	5	
Acetone	ug/L	6000	5	U	5	5	U	5	NDR	5	U	5	5	U	5	5	U	5	5	U	5	
Benzene	ug/L	1	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
Bromochloromethane	ug/L	NS				0.5	U	0.5	NDR				0.5	U	0.5							
Bromodichloromethane	ug/L	1	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
Bromoform	ug/L	4	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
Bromomethane	ug/L	10	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
Carbon Disulfide	ug/L	700	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
Carbon Tetrachloride	ug/L	2	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
Chlorobenzene	ug/L	4	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
Chloroethane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
Chloroform	ug/L	6	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
Chloromethane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
cis-1,2-Dichloroethene	ug/L	10	0.27	J	0.5	0.2	J	0.5	NDR	0.66	0.5	0.41	J	0.5	1.9	J	0.5					
cis-1,3-Dichloropropene	ug/L	NS	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
Cyclohexane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
Dibromochloromethane	ug/L	10	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
Dichlorodifluoromethane	ug/L	1000	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
Ethylbenzene	ug/L	700	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
Freon 113	ug/L	NS	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
Isopropylbenzene	ug/L	700	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
m,p-Xylenes	ug/L	NS				0.5	U	0.5	NDR				0.5	U	0.5							
Methyl Acetate	ug/L	7000	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
Methyl Cyclohexane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
Methyl tert-Butyl Ether	ug/L	70	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
Methylene Chloride	ug/L	2	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
o-Xylene	ug/L	NS				0.5	U	0.5	NDR				0.5	U	0.5							
Styrene	ug/L	100	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
Tetrachloroethene	ug/L	1	0.79		0.5	0.58	0.5	NDR	0.81	0.5	0.5	0.5	U	0.5	0.29	J	0.5					
Toluene	ug/L	600	0.5	U	0.5	0.5	U	0.5	NDR	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	
trans-1,2-Dichloroethene	ug/L	100	0.5	U	0.5	0.5	U	0.5														

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			RMW-11D RMW-11D N7/2/2007 13308	RMW-11D RMW-11D_11302010			RMW-11D RMW-11D_12082010	RMW-11D RMW-11D-1590707			RMW-12D MW-12D 12/18/2009	RMW-12D MW-12D N6/29/2007 13308					
Sample Date N=Normal, FD=Field Duplicate start_depth			7/2/2007 N	11/30/2010 N			12/8/2010 N	8/5/2008 N			12/18/2009 N	6/29/2007 N					
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Biodegradation Indicator Gases																	
Ethane	ug/L	NS	0.031	0.025	NDR	NDR	NDR	NDR	NDR	NDR	NDR	0.027	0.025				
Ethene	ug/L	NS	0.04	0.025	NDR	NDR	NDR	NDR	NDR	NDR	NDR	0.011	J	0.025			
Methane	ug/L	NS	8.2	0.1	NDR	NDR	NDR	NDR	NDR	NDR	NDR	3.3		0.1			

Notes:

ug/L = micrograms per liter

Qual = validated qualifier

QL = Quantitation Limit

NDR = no data reported

NS = no standard available

Qualifiers:

J - Result or reporting limit is estimated.

U - Result was not detected at or
above the method detection limit.

R - Result was rejected.

* NJDEP GWQC: Higher of the Practical Quantitation Limit
and Ground Water Quality Criterion (N.J.A.C. 7:9C) 07/2010,
as well as Interim Groundwater Quality Criteria.

Inorganic results from MW-21R sampled in December 2009
were unfiltered grab samples collected for Bench Testing
and were not used in the Risk Assessment

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

		Sample ID sys_sample_code	RMW-12D MW-12D-1590709		RMW-12D RMW-12D_11302010		RMW-12D RMW-12D_12082010		RMW-12D RMW-12D-FD_11302010		RMW-13D FDMW-13D FD6/29/2007 13308		RMW-13D FMW-13D-1590711						
		Sample Date N=Normal, FD=Field Duplicate start_depth	8/5/2008 N		11/30/2010 N		12/8/2010 N		11/30/2010 FD		6/29/2007 FD		8/5/2008 FD						
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL		
Inorganics																			
Aluminum	ug/L	200	267	200	382	200	NDR		444	200	200	U	200	NDR					
Antimony	ug/L	6	60	U	60	0.34	J	2	NDR		0.29	J	2	60	U	60	60	U	60
Arsenic	ug/L	3	10	U	10	0.4	J	1	NDR		0.58	J	1	2.8	J	10	10	U	10
Barium	ug/L	6000	32.1	J	200	40.2		10	NDR		43.5		10	200	U	200	191	J	200
Beryllium	ug/L	1	5	U	5	1	U	1	NDR		1	U	1	5	U	5	5	U	5
Cadmium	ug/L	4	5	U	5	1	U	1	NDR		1	U	1	5	U	5	5	U	5
Calcium	ug/L	NS	40100		5000	39700	J	5000	NDR		41000	J	5000	58700		5000	31400		5000
Chromium	ug/L	70	10		10	19.6	J	2	NDR		25.6	J	2	10	U	10	20.8	J	10
Cobalt	ug/L	NS	50	U	50	5.5	J	1	NDR		15	J	1	50	U	50	50	U	50
Copper	ug/L	1300	25	U	25	13.1		2	NDR		12.6		2	25	U	25	25	U	25
Iron	ug/L	300	770		100	837	J	100	NDR		1140	J	100	228	J	100	5860		100
Lead	ug/L	5	3	U	3	1.4	J	1	NDR		1.4	J	1	3	U	3	10.1		3
Magnesium	ug/L	NS	5000	U	5000	2780	J	5000	NDR		2780	J	5000	5000	U	5000	5000	U	5000
Manganese	ug/L	50	40.5	J	15	41.8		1	NDR		46.6		1	115	J	15	231	J	15
Mercury	ug/L	2	0.2	U	0.2	0.2	UJ	0.2	NDR		0.2	UJ	0.2	0.2	U	0.2	0.15	J	0.2
Nickel	ug/L	100	19.2	J	40	21.2		1	NDR		25.9		1	40	U	40	13.3	J	40
Potassium	ug/L	NS	5000	U	5000	9560	J	5000	NDR		8920	J	5000	5000	U	5000	5000	U	5000
Selenium	ug/L	40	5	U	5	0.54	J	5	NDR		0.5	J	5	5	U	5	6		5
Silver	ug/L	40	10	U	10	0.74	J	1	NDR		1.6		1	10	U	10	10	U	10
Sodium	ug/L	50000	15200		5000	17000		5000	NDR		17700		5000	130000		5000	60900		5000
Thallium	ug/L	2	10	U	10	1	U	1	NDR		1	U	1	10	U	10	10	U	10
Vanadium	ug/L	NS	13.6	J	50	5	U	5	NDR		5	U	5	50	U	50	7.4	J	50
Zinc	ug/L	2000	35.1		20	36.1		2	NDR		37.3		2	20	U	20	118		20
PCBs																			
Aroclor 1016	ug/L	NS	1	U	1	0.98	U	0.98	NDR		0.98	U	0.98	NDR		1	U	1	
Aroclor 1221	ug/L	NS	2	U	2	0.98	U	0.98	NDR		0.98	U	0.98	NDR		2	U	2	
Aroclor 1232	ug/L	NS	1	U	1	0.98	U	0.98	NDR		0.98	U	0.98	NDR		1	U	1	
Aroclor 1242	ug/L	NS	1	U	1	0.98	U	0.98	NDR		0.98	U	0.98	NDR		1	U	1	
Aroclor 1248	ug/L	NS	1	U	1	0.98	U	0.98	NDR		0.98	U	0.98	NDR		1	U	1	
Aroclor 1254	ug/L	NS	1	U	1	0.98	U	0.98	NDR		0.98	U	0.98	NDR		1	U	1	
Aroclor 1260	ug/L	NS	1	U	1	0.98	U	0.98	NDR		0.98	U	0.98	NDR		1	U	1	
Aroclor 1262	ug/L	NS	NDR			0.98	U	0.98	NDR		0.98	U	0.98	NDR		NDR			
Aroclor 1268	ug/L	NS	NDR			0.98	U	0.98	NDR		0.98	U	0.98	NDR		NDR			
Pesticides																			
4,4-DDD	ug/L	0.1	0.1	U	0.1	0.1	U	0.1	NDR		0.098	U	0.098	NDR		0.1	U	0.1	
4,4-DDE	ug/L	0.1	0.1	U	0.1	0.1	U	0.1	NDR		0.098	U	0.098	NDR		0.1	U	0.1	
4,4-DDT	ug/L	0.1	0.1	U	0.1	0.1	U	0.1	NDR		0.098	U	0.098	NDR		0.1	U	0.1	
Aldrin	ug/L	0.04	0.05	U	0.05	0.05	U	0.05	NDR		0.049	U	0.049	NDR		0.05	U	0.05	
alpha-BHC	ug/L	0.02	0.05	U	0.05	0.05	U	0.05	NDR		0.049	U	0.049	NDR		0.05	U	0.05	
alpha-Chlordane	ug/L	NS	0.05	U	0.05	0.05	U	0.05	NDR		0.049	U	0.049	NDR		0.05	U	0.05	
alpha-Endosulfan	ug/L	40	0.05	U	0.05	0.05	U	0.05	NDR		0.049	U	0.049	NDR		0.04	J	0.05	

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

			Sample ID sys_sample_code	RMW-12D MW-12D-1590709			RMW-12D RMW-12D_11302010			RMW-12D RMW-12D_12082010			RMW-12D RMW-12D-FD_11302010			RMW-13D FDMW-13D FD6/29/2007 13308			RMW-13D FMW-13D-1590711		
			Sample Date N=Normal, FD=Field Duplicate start_depth	8/5/2008 N			11/30/2010 N			12/8/2010 N			11/30/2010 FD			6/29/2007 FD			8/5/2008 FD		
Parameter	Unit	NJDEP GWQC		Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
beta-BHC	ug/L	0.04		0.05	U	0.05	0.05	U	0.05	NDR			0.049	U	0.049	NDR			0.018	J	0.05
beta-Endosulfan	ug/L	40		0.1	U	0.1	0.1	U	0.1	NDR			0.098	U	0.098	NDR			0.1	U	0.1
delta-BHC	ug/L	NS		0.05	U	0.05	0.05	U	0.05	NDR			0.049	U	0.049	NDR			0.05	U	0.05
Dieldrin	ug/L	0.03		0.1	U	0.1	0.1	U	0.1	NDR			0.098	U	0.098	NDR			0.1	U	0.1
Endosulfan Sulfate	ug/L	40		0.1	U	0.1	0.1	U	0.1	NDR			0.098	U	0.098	NDR			0.1	U	0.1
Endrin	ug/L	2		0.1	U	0.1	0.1	U	0.1	NDR			0.098	U	0.098	NDR			0.1	U	0.1
Endrin Aldehyde	ug/L	NS		0.1	U	0.1	0.1	U	0.1	NDR			0.098	U	0.098	NDR			0.1	U	0.1
Endrin Ketone	ug/L	NS		0.1	U	0.1	0.1	U	0.1	NDR			0.098	U	0.098	NDR			0.1	U	0.1
gamma-BHC	ug/L	0.03		0.05	U	0.05	0.05	U	0.05	NDR			0.049	U	0.049	NDR			0.05	U	0.05
Heptachlor	ug/L	0.05		0.05	U	0.05	0.05	U	0.05	NDR			0.049	U	0.049	NDR			0.05	U	0.05
Heptachlor Epoxide	ug/L	0.2		0.05	U	0.05	0.05	U	0.05	NDR			0.049	U	0.049	NDR			0.05	U	0.05
Methoxychlor	ug/L	40		0.5	U	0.5	0.5	U	0.5	NDR			0.49	U	0.49	NDR			0.5	U	0.5
Toxaphene	ug/L	2		5	U	5	5	U	5	NDR			4.9	U	4.9	NDR			5	U	5
trans-Chlordane	ug/L	NS		0.05	U	0.05	0.05	U	0.05	NDR			0.049	U	0.049	NDR			0.05	U	0.05
Semivolatile Organic Compounds																					
1,2,4,5-Tetrachlorobenzene	ug/L	NS		NDR			NDR			5	U	5	5	U	5	NDR			NDR		
2,3,4,6-Tetrachlorophenol	ug/L	200		NDR			NDR			5	U	5	5	U	5	NDR			NDR		
2,4,5-Trichlorophenol	ug/L	700		25	U	25	NDR			5	U	5	5	U	5	NDR			25	U	25
2,4,6-Trichlorophenol	ug/L	20		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10
2,4-Dichlorophenol	ug/L	20		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10
2,4-Dimethylphenol	ug/L	100		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10
2,4-Dinitrophenol	ug/L	40		25	U	25	NDR			10	U	10	10	U	10	NDR			25	U	25
2,4-Dinitrotoluene	ug/L	NS		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10
2,6-Dinitrotoluene	ug/L	NS		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10
2-Chloronaphthalene	ug/L	600		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10
2-Chlorophenol	ug/L	40		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10
2-Methylnaphthalene	ug/L	NS		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10
2-Methylphenol	ug/L	NS		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10
2-Nitroaniline	ug/L	NS		25	U	25	NDR			10	U	10	10	U	10	NDR			25	U	25
2-Nitrophenol	ug/L	NS		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10
3,3'-Dichlorobenzidine	ug/L	30		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10
3-Nitroaniline	ug/L	NS		25	U	25	NDR			10	U	10	10	U	10	NDR			25	U	25
4,6-Dinitro-2-methylphenol	ug/L	NS		25	U	25	NDR			10	U	10	10	U	10	NDR			25	U	25
4-Bromophenyl Phenyl Ether	ug/L	NS		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10
4-Chloro-3-methylphenol	ug/L	NS		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10
4-Chloroaniline	ug/L	30		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10
4-Chlorophenyl-phenylether	ug/L	NS		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10
4-Methylphenol	ug/L	NS		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10
4-Nitroaniline	ug/L	NS		25	U	25	NDR			10	U	10	10	U	10	NDR			25		

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

			Sample ID sys_sample_code	RMW-12D MW-12D-1590709			RMW-12D RMW-12D_11302010			RMW-12D RMW-12D_12082010			RMW-12D RMW-12D-FD_11302010			RMW-13D FDMW-13D FD6/29/2007 13308			RMW-13D FMW-13D-1590711			
			Sample Date N=Normal, FD=Field Duplicate start_depth	8/5/2008 N			11/30/2010 N			12/8/2010 N			11/30/2010 FD			6/29/2007 FD			8/5/2008 FD			
Parameter	Unit	NJDEP GWQC		Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	
Benzaldehyde	ug/L	NS		NDR			NDR			5	U	5	5	U	5	NDR			NDR			
Benzo[a]anthracene	ug/L	0.1		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Benzo[a]pyrene	ug/L	0.1		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Benzo[b]fluoranthene	ug/L	0.2		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Benzo[g,h,i]perylene	ug/L	NS		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Benzo[k]fluoranthene	ug/L	0.5		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Biphenyl	ug/L	400		NDR			NDR			5	U	5	5	U	5	NDR			NDR			
Bis(2-chloroethoxy)methane	ug/L	NS		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Bis(2-chloroethyl) Ether	ug/L	7		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Bis(2-chloroisopropyl) Ether	ug/L	300		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Bis(2-ethylhexyl) Phthalate	ug/L	3		4	J	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Butylbenzyl Phthalate	ug/L	100		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Caprolactum	ug/L	NS		NDR			NDR			5	U	5	5	U	5	NDR			NDR			
Carbazole	ug/L	NS		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Chrysene	ug/L	5		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Dibeno[a,h]anthracene	ug/L	0.3		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Dibenzofuran	ug/L	NS		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Diethyl Phthalate	ug/L	6000		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Dimethyl Phthalate	ug/L	NS		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Di-n-Butyl Phthalate	ug/L	700		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Di-n-octyl Phthalate	ug/L	100		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Fluoranthene	ug/L	300		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Fluorene	ug/L	300		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Hexachlorobenzene	ug/L	0.02		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Hexachlorobutadiene	ug/L	1		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Hexachlorocyclopentadiene	ug/L	40		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Hexachloroethane	ug/L	7		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Indeno[1,2,3-cd]pyrene	ug/L	0.2		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Isophorone	ug/L	40		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Naphthalene	ug/L	300		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Nitrobenzene	ug/L	6		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
N-Nitroso-di-n-propylamine	ug/L	10		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
N-Nitrosodiphenylamine	ug/L	10		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Pentachlorophenol	ug/L	0.3		25	U	25	NDR			10	U	10	10	U	10	NDR			25	U	25	
Phenanthrene	ug/L	NS		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Phenol	ug/L	2000		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Pyrene	ug/L	200		10	U	10	NDR			5	U	5	5	U	5	NDR			10	U	10	
Volatile Organic Compounds																						
1,1,1-Trichloroethane	ug/L	30		0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	2.1	0.5		13	U	13	
1,1,2,2-Tetrachloroethane	ug/L	2		0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5		13	U	13
1,1,2-Trichloroethane	ug/L	3		0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5		13	U	13
1,1-Dichloroethane	ug/L	70		0.11	J	0.5	0.093	J	0.5	NDR			0.11	J	0.5	11	0.5		6.5	J	13	
1,1-Dichloroethene	ug/L	2		0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	31	0.5		15		13	
1,2,3-Trichlorobenzene	ug/L	NS					0.5	U	0.5	NDR			0.5	U	0.5	NDR						

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

			Sample ID sys_sample_code			RMW-12D MW-12D-1590709			RMW-12D RMW-12D_11302010			RMW-12D RMW-12D_12082010			RMW-12D RMW-12D-FD_11302010			RMW-13D FDMW-13D FD6/29/2007 13308			RMW-13D FMW-13D-1590711		
			Sample Date N=Normal, FD=Field Duplicate start_depth			8/5/2008 N			11/30/2010 N			12/8/2010 N			11/30/2010 FD			6/29/2007 FD			8/5/2008 FD		
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
1,2-Dibromoethane	ug/L	0.03	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
1,2-Dichlorobenzene	ug/L	600	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
1,2-Dichloroethane	ug/L	2	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	24			24			13	U	13
1,2-Dichloropropane	ug/L	1	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
1,3-Dichlorobenzene	ug/L	600	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
1,4-Dichlorobenzene	ug/L	75	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
1,4-Dioxane	ug/L	NS							NDR			NDR			NDR			NDR					
2-Butanone	ug/L	300	5	U	5	5	U	5	NDR			5	U	5	7.6	J	5	130	U	130			
2-Hexanone	ug/L	NS	5	U	5	5	U	5	NDR			5	U	5	5	R	5	130	U	130			
4-Methyl-2-pentanone	ug/L	NS	5	U	5	5	U	5	NDR			5	U	5	5	R	5	130	U	130			
Acetone	ug/L	6000	5	U	5	9.3	J	5	NDR			16	J	5	5	UJ	5	125	U	125			
Benzene	ug/L	1	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	1.5		0.5	13	U	13			
Bromochloromethane	ug/L	NS				0.5	U	0.5	NDR			0.5	U	0.5	NDR			NDR					
Bromodichloromethane	ug/L	1	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
Bromoform	ug/L	4	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
Bromomethane	ug/L	10	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
Carbon Disulfide	ug/L	700	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
Carbon Tetrachloride	ug/L	2	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
Chlorobenzene	ug/L	4	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	1.4		0.5	13	U	13			
Chloroethane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
Chloroform	ug/L	6	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	31		0.5	19	U	19			
Chloromethane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
cis-1,2-Dichloroethene	ug/L	10	2.1	0.5	1.7	0.5	0.5	NDR			1.9	0.5	300	0.5		280		13					
cis-1,3-Dichloropropene	ug/L	NS	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
Cyclohexane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
Dibromochloromethane	ug/L	10	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
Dichlorodifluoromethane	ug/L	1000	0.12	J	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
Ethylbenzene	ug/L	700	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
Freon 113	ug/L	NS	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	7.2		0.5	13	U	13			
Isopropylbenzene	ug/L	700	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
m,p-Xylenes	ug/L	NS				0.5	U	0.5	NDR			0.5	U	0.5	NDR			NDR					
Methyl Acetate	ug/L	7000	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
Methyl Cyclohexane	ug/L	NS	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
Methyl tert-Butyl Ether	ug/L	70	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
Methylene Chloride	ug/L	2	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
o-Xylene	ug/L	NS				0.5	U	0.5	NDR			0.5	U	0.5	NDR			NDR					
Styrene	ug/L	100	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.5	U	0.5	13	U	13			
Tetrachloroethene	ug/L	1	0.34	J	0.5	0.2	J	0.5	NDR			0.2	J	0.5	27	J	0.5	5.4	J	13			
Toluene	ug/L	600	0.5	U	0.5	0.5	U	0.5	NDR			0.5	U	0.5	0.								

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

Sample ID sys_sample_code			RMW-12D MW-12D-1590709	RMW-12D RMW-12D_11302010	RMW-12D RMW-12D_12082010	RMW-12D RMW-12D-FD_11302010	RMW-13D FDMW-13D FD6/29/2007 13308	RMW-13D FMW-13D-1590711
Sample Date N=Normal, FD=Field Duplicate start_depth			8/5/2008 N	11/30/2010 N	12/8/2010 N	11/30/2010 FD	6/29/2007 FD	8/5/2008 FD
Parameter	Unit	NJDEP GWQC	Result Qual QL	Result Qual QL	Result Qual QL	Result Qual QL	Result Qual QL	Result Qual QL
Biodegradation Indicator Gases								
Ethane	ug/L	NS	NDR	NDR	NDR	NDR	0.26	0.025
Ethene	ug/L	NS	NDR	NDR	NDR	NDR	1.1	0.025
Methane	ug/L	NS	NDR	NDR	NDR	NDR	31	0.1

Notes:

ug/L = micrograms per liter

Qual = validated qualifier

QL = Quantitation Limit

NDR = no data reported

NS = no standard available

Qualifiers:

J - Result or reporting limit is estimated.

U - Result was not detected at or
above the method detection limit.

R - Result was rejected.

* NJDEP GWQC: Higher of the Practical Quantitation Limit
and Ground Water Quality Criterion (N.J.A.C. 7:9C) 07/2010,
as well as Interim Groundwater Quality Criteria.

Inorganic results from MW-21R sampled in December 2009
were unfiltered grab samples collected for Bench Testing
and were not used in the Risk Assessment

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

			Sample ID sys_sample_code	RMW-13D MW-13D 12/17/2009			RMW-13D MW-13D N6/29/2007 13308			RMW-13D MW-13D-1590710 8/5/2008			RMW-13D RMW-13D_12022010 12/2/2010			RMW-8D RMW-8D 12/17/2009 12/17/2009			RMW-8D RMW-8D N6/28/2007 13308 6/28/2007			RMW-8D RMW-8D_12012010 12/1/2010					
			Sample Date N=Normal, FD=Field Duplicate start_depth	N			N			N			N			N			N			N					
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	
Inorganics																											
Aluminum	ug/L	200	6730	200	200	U	200	NDR	1460	200	200	U	200	200	U	200	501	200	220	J	200						
Antimony	ug/L	6	2	U	2	60	U	60	60	U	60	1.6	J	2	2	U	2	60	U	60	0.52	J	2	60	UJ	60	
Arsenic	ug/L	3	2.8	1	10	U	10	10	U	10	1.3	1	2.3	1	10	U	10	1.2	1	10	UJ	10					
Barium	ug/L	6000	93.1	J	10	200	U	200	169	J	200	51.4	10	32	J	10	200	U	200	34.5	10	28.6	J	200			
Beryllium	ug/L	1	1	U	1	5	U	5	5	U	5	1	U	1	1	U	1	5	U	5	1	U	1	5	UJ	5	
Cadmium	ug/L	4	1.9	J	1	5	U	5	5	U	5	0.2	J	1	1	U	1	5	U	5	0.18	J	1	5	UJ	5	
Calcium	ug/L	NS	8350	5000	55100		5000	30100	5000	6320	J	5000	71600	5000	22600		5000	62900	J	5000	38400	J	5000				
Chromium	ug/L	70	74.4	J	2	10	U	10	5.3	J	10	19.8	2	2	U	2	10	U	10	21.3	2	7.1	J	10			
Cobalt	ug/L	NS	6.4	1	50	U	50	50	U	50	2.3	1	1	U	1	50	U	50	5.9	1	5.5	J	50				
Copper	ug/L	1300	77.7	J	2	25	U	25	25	U	25	17.4	2	2.2	J	2	25	U	25	15.2	2	25	UJ	25			
Iron	ug/L	300	9990	100	214	J	100	4010	100	2930	100	256	100	185	J	100	1100	100	599	J	100						
Lead	ug/L	5	48.6	1	3	U	3	6.7	3	8.5	J	1	1	U	1	3	U	3	2.3	J	1	2	J	3			
Magnesium	ug/L	NS	5000	5000	5000	U	5000	5000	U	5000	1900	J	5000	162	J	5000	5000	U	5000	726	J	5000	5000	UJ	5000		
Manganese	ug/L	50	172	1	113	J	15	207	J	15	60.8	1	3.7	1	15	UJ	15	27.3	1	17.4	J	15					
Mercury	ug/L	2	0.13	J	0.2	0.2	U	0.2	0.12	J	0.2	0.2	UJ	0.2	0.2	U	0.2	0.2	U	0.2	0.2	UJ	0.2	0.2	UJ	0.2	
Nickel	ug/L	100	38.3	1	40	U	40	5.6	J	40	11	1	3.3	J	1	40	U	40	33.4	J	1	20.3	J	40			
Potassium	ug/L	NS	2160	J	5000	5000	U	5000	5000	U	5000	1530	J	5000	4620	J	5000	5000	U	5000	3540	J	5000	5000	UJ	5000	
Selenium	ug/L	40	0.34	J	5	5	U	5	5	U	5	5	U	5	5	U	5	5.4	5	0.27	J	5	5	UJ	5		
Silver	ug/L	40	1	U	1	10	U	10	10	U	10	0.75	J	1	1	U	1	10	U	10	0.95	J	1	10	UJ	10	
Sodium	ug/L	50000	12100	5000	126000		5000	59800	5000	14000	5000	59900	5000	24400		5000	54200		5000	37300	J	5000					
Thallium	ug/L	2	1	U	1	10	U	10	10	U	10	1	U	1	1	U	1	10	U	10	1	U	1	10	UJ	10	
Vanadium	ug/L	NS	18.7	5	50	U	50	2.9	J	50	5	U	5	43.1	5	50	U	50	5	U	5	36.8	J	50			
Zinc	ug/L	2000	427	J	2	20	U	20	67.9	20	84.4	2	5.4	J	2	55.2	20	40.7	J	2	45.4	J	20				
PCBs																											
Aroclor 1016	ug/L	NS	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	0.98	U	0.98	1	UJ	1	
Aroclor 1221	ug/L	NS	1	U	1	2	U	2	2	U	2	1	U	1	1	U	1	2	U	2	0.98	U	0.98	2	UJ	2	
Aroclor 1232	ug/L	NS	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	0.98	U	0.98	1	UJ	1	
Aroclor 1242	ug/L	NS	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	0.98	U	0.98	1	UJ	1	
Aroclor 1248	ug/L	NS	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	0.98	U	0.98	1	UJ	1	
Aroclor 1254	ug/L	NS	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	0.98	U	0.98	1	UJ	1	
Aroclor 1260</td																											

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

			Sample ID sys_sample_code	RMW-13D MW-13D 12/17/2009	RMW-13D MW-13D N6/29/2007 13308	RMW-13D MW-13D-1590710 6/29/2007	RMW-13D RMW-13D_12022010 8/5/2008	RMW-8D RMW-8D 12/17/2009 12/2/2010	RMW-8D RMW-8D N6/28/2007 13308 12/17/2009	RMW-8D RMW-8D 6/28/2007 N	RMW-8D RMW-8D_12012010 12/1/2010	RMW-8D RMW-8D-1590702 8/4/2008														
			Sample Date N=Normal, FD=Field Duplicate start_depth	N	N	N	N	N	N	N	N	N														
Parameter	Unit	NJDEP GWQC																								
beta-BHC	ug/L	0.04	Result 0.05	Qual U	QL 0.05	Result 0.05	Qual U	QL 0.05	Result 0.015	Qual J	QL 0.05	Result 0.05	Qual U	QL 0.05	Result 0.05	Qual U	QL 0.05	Result 0.049	Qual U	QL 0.049	Result 0.05	Qual UJ	QL 0.05			
beta-Endosulfan	ug/L	40	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.098	U	0.098	0.1	UJ	0.1			
delta-BHC	ug/L	NS	0.05	U	0.05	0.05	U	0.05	0.011	J	0.05	0.05	U	0.05	0.05	U	0.05	0.049	U	0.049	0.05	UJ	0.05			
Dieldrin	ug/L	0.03	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.098	U	0.098	0.1	UJ	0.1			
Endosulfan Sulfate	ug/L	40	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.098	U	0.098	0.1	UJ	0.1			
Endrin	ug/L	2	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.098	U	0.098	0.1	UJ	0.1			
Endrin Aldehyde	ug/L	NS	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.098	U	0.098	0.1	UJ	0.1			
Endrin Ketone	ug/L	NS	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.098	U	0.098	0.1	UJ	0.1			
gamma-BHC	ug/L	0.03	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.049	U	0.049	0.05	UJ	0.05			
Heptachlor	ug/L	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.049	U	0.049	0.05	UJ	0.05			
Heptachlor Epoxide	ug/L	0.2	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.049	U	0.049	0.05	UJ	0.05			
Methoxychlor	ug/L	40	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	0.49	U	0.49	0.5	UJ	0.5			
Toxaphene	ug/L	2	5	U	5	5	U	5	5	U	5	5	U	5	5	U	5	4.9	U	4.9	5	UJ	5			
trans-Chlordane	ug/L	NS	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.049	U	0.049	0.05	UJ	0.05			
Semivolatile Organic Compounds																										
1,2,4,5-Tetrachlorobenzene	ug/L	NS	5.3	U	5.3	NDR		NDR	5	U	5	5	U	5	NDR		4.8	U	4.8	NDR						
2,3,4,6-Tetrachlorophenol	ug/L	200	5.3	U	5.3	NDR		NDR	5	U	5	5	U	5	NDR		4.8	U	4.8	NDR						
2,4,5-Trichlorophenol	ug/L	700	5.3	U	5.3	25	U	25	25	U	25	5	U	5	5	U	5	25	U	25	4.8	U	4.8	25	UJ	25
2,4,6-Trichlorophenol	ug/L	20	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10
2,4-Dichlorophenol	ug/L	20	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10
2,4-Dimethylphenol	ug/L	100	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10
2,4-Dinitrophenol	ug/L	40	11	U	11	25	U	25	25	U	25	10	U	10	10	U	10	25	U	25	9.5	U	9.5	25	UJ	25
2,4-Dinitrotoluene	ug/L	NS	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10
2,6-Dinitrotoluene	ug/L	NS	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10
2-Chloronaphthalene	ug/L	600	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10
2-Chlorophenol	ug/L	40	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10
2-Methylnaphthalene	ug/L	NS	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10
2-Methylphenol	ug/L	NS	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10
2-Nitroaniline	ug/L	NS	11	U	11	25	U	25	25	U	25	10	U	10	10	U	10	25	U	25	9.5	U	9.5	25	UJ	25
2-Nitrophenol	ug/L	NS	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10
3,3'-Dichlorobenzidine	ug/L	30	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10
3-Nitroaniline	ug/L	NS	11	U	11	25	U	25	25	U	25	10	U	10	10	U	10	25	U	25	9.5	U	9.5	25	UJ	25
4,6-Dinitro-2-methylphenol	ug/L	NS	11	U	11	25	U	25	25	U	25	10	U	10	10	U	10	25	U	25	9.5	U	9.5	25	UJ	25
4-Bromophenyl Phenyl Ether	ug/L	NS	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.					

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

			Sample ID sys_sample_code	RMW-13D MW-13D 12/17/2009			RMW-13D MW-13D N6/29/2007 13308			RMW-13D MW-13D-1590710 8/5/2008			RMW-13D RMW-13D_12022010 12/2/2010			RMW-8D RMW-8D 12/17/2009 12/17/2009			RMW-8D RMW-8D N6/28/2007 13308 6/28/2007			RMW-8D RMW-8D_12012010 12/1/2010					
N=Normal, FD=Field Duplicate start_depth				N			N			N			N			N			N			N					
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	
Benzaldehyde	ug/L	NS	5.3	U	5.3	NDR			5	U	5	5	U	5	10	U	10	4.8	U	4.8	NDR						
Benzo[a]anthracene	ug/L	0.1	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Benzo[a]pyrene	ug/L	0.1	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Benzo[b]fluoranthene	ug/L	0.2	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Benzo[g,h,i]perylene	ug/L	NS	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Benzo[k]fluoranthene	ug/L	0.5	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Biphenyl	ug/L	400	5.3	U	5.3	NDR			5	U	5	5	U	5	NDR			4.8	U	4.8	NDR						
Bis(2-chloroethoxy)methane	ug/L	NS	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Bis(2-chloroethyl) Ether	ug/L	7	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Bis(2-chloroisopropyl) Ether	ug/L	300	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Bis(2-ethylhexyl) Phthalate	ug/L	3	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	5	J	10	4.8	U	4.8	10	UJ	10	
Butylbenzyl Phthalate	ug/L	100	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Caprolactum	ug/L	NS	5.3	U	5.3	NDR			5	U	5	5	U	5	NDR			4.8	U	4.8	NDR						
Carbazole	ug/L	NS	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Chrysene	ug/L	5	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Dibenzo[a,h]anthracene	ug/L	0.3	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Dibenzo furan	ug/L	NS	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Diethyl Phthalate	ug/L	6000	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Dimethyl Phthalate	ug/L	NS	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Di-n-Butyl Phthalate	ug/L	700	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Di-n-octyl Phthalate	ug/L	100	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Fluoranthene	ug/L	300	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Fluorene	ug/L	300	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Hexachlorobenzene	ug/L	0.02	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Hexachlorobutadiene	ug/L	1	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Hexachlorocyclopentadiene	ug/L	40	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Hexachloroethane	ug/L	7	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Indeno[1,2,3-cd]pyrene	ug/L	0.2	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Isophorone	ug/L	40	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Naphthalene	ug/L	300	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	10	
Nitrobenzene	ug/L	6	5.3	U	5.3	10	U	10	10	U	10	5	U	5	5	U	5	10	U	10	4.8	U	4.8	10	UJ	1	

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

			Sample ID sys_sample_code	RMW-13D MW-13D 12/17/2009			RMW-13D MW-13D N6/29/2007 13308			RMW-13D MW-13D-1590710 8/5/2008			RMW-13D RMW-13D_12022010 12/2/2010			RMW-8D RMW-8D 12/17/2009 12/17/2009			RMW-8D RMW-8D N6/28/2007 13308 6/28/2007			RMW-8D RMW-8D_12012010 12/1/2010			RMW-8D RMW-8D-1590702 8/4/2008				
			Sample Date N=Normal, FD=Field Duplicate start_depth	N			N			N			N			N			N			N			N				
Parameter	Unit	NJDEP GWQC		Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL		
1,2-Dibromoethane	ug/L	0.03		0.5	U	0.5	0.5	U	0.5	13	U	13	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5		
1,2-Dichlorobenzene	ug/L	600		0.5	U	0.5	0.5	U	0.5	13	U	13	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5		
1,2-Dichloroethane	ug/L	2		0.67		0.5	22		0.5	28		13	1		0.5		0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5
1,2-Dichloropropane	ug/L	1		0.5	U	0.5	0.5	U	0.5	13	U	13	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5		
1,3-Dichlorobenzene	ug/L	600		0.5	U	0.5	0.5	U	0.5	13	U	13	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5		
1,4-Dichlorobenzene	ug/L	75		0.5	U	0.5	0.5	U	0.5	13	U	13	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5		
1,4-Dioxane	ug/L	NS		NDR			1.1	J	2	NDR			NDR			NDR			0.99	J	2	NDR			NDR				
2-Butanone	ug/L	300		5	U	5	3	J	5	130	U	130	5	U	5	5	U	5	5	U	5	25	U	25	5	U	5		
2-Hexanone	ug/L	NS		5	U	5	5	R	5	130	U	130	5	U	5	5	U	5	5	U	5	25	U	25	5	U	5		
4-Methyl-2-pentanone	ug/L	NS		5	U	5	5	R	5	130	U	130	2.3	J	5	5	U	5	5	U	5	25	U	25	5	U	5		
Acetone	ug/L	6000		6.9	U	6.9	5	UJ	5	125	U	125	6.2		5	5	U	5	5	U	5	75		25	7.1	U	7.1		
Benzene	ug/L	1		0.5	U	0.5	1.5		0.5	13	U	13	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5		
Bromochloromethane	ug/L	NS		0.5	U	0.5	NDR			NDR			0.5	U	0.5	0.5	U	0.5	NDR			2.5	U	2.5	NDR				
Bromodichloromethane	ug/L	1		0.5	U	0.5	0.5	U	0.5	13	U	13	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5		
Bromoform	ug/L	4		0.5	U	0.5	0.5	U	0.5	13	U	13	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5		
Bromomethane	ug/L	10		0.5	U	0.5	0.5	U	0.5	13	U	13	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5		
Carbon Disulfide	ug/L	700		0.5	U	0.5	0.5	U	0.5	13	U	13	0.083	J	0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5		
Carbon Tetrachloride	ug/L	2		0.5	U	0.5	0.5	U	0.5	13	U	13	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5		
Chlorobenzene	ug/L	4		0.5	U	0.5	1.3		0.5	13	U	13	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5		
Chloroethane	ug/L	NS		0.5	U	0.5	0.5	U	0.5	13	U	13	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5		
Chloroform	ug/L	6		0.5	U	0.5	30		0.5	21	U	21	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5		
Chloromethane	ug/L	NS		0.5	U	0.5	0.5	U	0.5	13	U	13	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5		
cis-1,2-Dichloroethene	ug/L	10		8.8	0.5	290		0.5	320		13		15		0.5	3.7		0.5	0.77	J	0.5	1.2	J	2.5	1.4	0.5			
cis-1,3-Dichloropropene	ug/L	NS		0.5	U	0.5	0.5	U	0.5	13	U	13	0.5	U	0.5	0.5	U	0.5	0.5	UJ	0.5	2.5	U	2.5	0.5	U	0.5		
Cyclohexane	ug/L	NS		0.5	U	0.5	0.5	U	0.5	13	U	13	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5		
Dibromochloromethane	ug/L	10		0.5	U	0.5	0.5	U	0.5	13	U	13	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5		
Dichlorodifluoromethane	ug/L	1000		0.5	U	0.5	0.5	U	0.5	13	U	13	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5		
Ethylbenzene	ug/L	700		0.5	U	0.5	0.5	U	0.5	13	U	13	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5		
Freon 113	ug/L	NS		0.5	U	0.5	9.6		0.5	13	U	13	0.5	U	0.5	0.5	U	0.5	0.5	U	0.5	2.5	U	2.5	0.5	U	0.5		
Isopropylbenzene	ug/L	700		0.5	U	0.5	0.5																						

Table C-1
Deep Groundwater (OU-3) Monitoring Well Samples Used for Risk Assessment
Analytical Results
216 Paterson Plank Road Site, Carlstadt, NJ

		Sample ID sys_sample_code	RMW-13D MW-13D 12/17/2009	RMW-13D MW-13D N6/29/2007 13308	RMW-13D MW-13D-1590710	RMW-13D RMW-13D_12022010	RMW-8D RMW-8D 12/17/2009	RMW-8D RMW-8D N6/28/2007 13308	RMW-8D RMW-8D_12012010	RMW-8D RMW-8D-1590702													
		Sample Date	12/17/2009	6/29/2007	8/5/2008	12/2/2010	12/17/2009	6/28/2007	12/1/2010	8/4/2008													
		N=Normal, FD=Field Duplicate start_depth	N	N	N	N	N	N	N	N													
Parameter	Unit	NJDEP GWQC	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL	Result	Qual	QL
Biodegradation Indicator Gases																							
Ethane	ug/L	NS	NDR	0.29	0.025	NDR	NDR	NDR	0.026	0.025	NDR	NDR	NDR										
Ethene	ug/L	NS	NDR	1.2	0.025	NDR	NDR	NDR	0.029	0.025	NDR	NDR	NDR										
Methane	ug/L	NS	NDR	38	0.1	NDR	NDR	NDR	35	0.1	NDR	NDR	NDR										

Notes:

ug/L = micrograms per liter

Qual = validated qualifier

QL = Quantitation Limit

NDR = no data reported

NS = no standard available

Qualifiers:

J - Result or reporting limit is estimated.

U - Result was not detected at or

above the method detection limit.

R - Result was rejected.

* NJDEP GWQC: Higher of the Practical Quantitation Limit

and Ground Water Quality Criterion (N.J.A.C. 7:9C) 07/2010,

as well as Interim Groundwater Quality Criteria.

Inorganic results from MW-21R sampled in December 2009

were unfiltered grab samples collected for Bench Testing

and were not used in the Risk Assessment

APPENDIX D
PROUCL OUTPUT SHEETS

General UCL Statistics for Data Sets with Non-Detects			
User Selected Options	Sheet1.wst		
From File	OFF		
Full Precision			
Confidence Coefficient	0.95		
Number of Bootstrap Operations	2000.00		
1,1,2-Trichloroethane			
General Statistics			
Number of Valid Data	70.00	Number of Detected Data	4.00
Number of Distinct Detected Data	4.00	Number of Non-Detect Data	66.00
		Percent Non-Detects	0.94
Raw Statistics			
Minimum Detected	0.81	Log-transformed Statistics	-0.21
Maximum Detected	1.10	Minimum Detected	0.10
Mean of Detected	0.93	Maximum Detected	-0.08
SD of Detected	0.13	Mean of Detected	0.13
Minimum Non-Detect	0.50	SD of Detected	-0.69
Maximum Non-Detect	50.00	Minimum Non-Detect	3.91
Note: Data have multiple DLs - Use of KM Method is recommended			
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Non-Detect		70.00
Observations < Largest ND are treated as NDs	Number treated as Detected		0.00
	Single DL Non-Detect Percentage		1.00

Warning: There are only 4 Distinct Detected Values in this data set
 Note: It should be noted that even though bootstrap may be performed on this data set
 the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.92	Shapiro Wilk Test Statistic	0.94
5% Shapiro Wilk Critical Value	0.75	5% Shapiro Wilk Critical Value	0.75
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.13	Mean	-0.93
SD	3.28	SD	1.05
95% DL/2 (t) UCL	1.78	95% H-Stat (DL/2) UCL	0.91
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.02
		SD in Log Scale	0.45
		Mean in Original Scale	0.40
		SD in Original Scale	0.19
		95% t UCL	0.44
		95% Percentile Bootstrap UCL	0.44
		95% BCA Bootstrap UCL	0.44
		95% H-UCL	0.44
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
K star (bias corrected)	19.29	Data appear Normal at 5% Significance Level	
Theta Star	0.05		
nu star	154.30		
A-D Test Statistic	0.31	Nonparametric Statistics	
5% A-D Critical Value	0.66	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.66	Mean	0.82
5% K-S Critical Value	0.39	SD	0.04
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.01
Assuming Gamma Distribution		95% KM (t) UCL	0.83
Gamma ROS Statistics using Extrapolated Data		95% KM (z) UCL	0.83
Minimum	0.00	95% KM (jackknife) UCL	0.86
Maximum	1.10	95% KM (bootstrap t) UCL	0.83
Mean	0.08	95% KM (BCA) UCL	0.93
Median	0.00	95% KM (Percentile Bootstrap) UCL	0.93
SD	0.23	95% KM (Chebyshev) UCL	0.84
k star	0.09	97.5% KM (Chebyshev) UCL	0.85
Theta star	0.83	99% KM (Chebyshev) UCL	0.88
Nu star	12.91	Potential UCLs to Use	
AppChi2	5.83	95% KM (t) UCL	0.83
95% Gamma Approximate UCL	0.17	95% KM (Percentile Bootstrap) UCL	0.93
95% Adjusted Gamma UCL			
N/A			

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

1,1-Dichloroethane

General Statistics

Number of Valid Data	73.00	Number of Detected Data	45.00
Number of Distinct Detected Data	40.00	Number of Non-Detect Data	28.00
		Percent Non-Detects	0.38

Raw Statistics

Minimum Detected	0.10	Log-transformed Statistics Minimum Detected	-2.30
Maximum Detected	600.00	Maximum Detected	6.40
Mean of Detected	33.33	Mean of Detected	0.57
SD of Detected	120.30	SD of Detected	2.31
Minimum Non-Detect	0.50	Minimum Non-Detect	-0.69
Maximum Non-Detect	10.00	Maximum Non-Detect	2.30

Note: Data have multiple DLs - Use of KM Method is recommended. Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods), Number treated as Detected
 Observations < Largest ND are treated as NDs Single DL Non-Detect Percentage

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic	0.30 Shapiro Wilk Test Statistic
5% Shapiro Wilk Critical Value	0.95 5% Shapiro Wilk Critical Value
Data not Normal at 5% Significance Level	Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution
Mean	DL/2 Substitution Method
SD	20.79 Mean
95% DL/2 (t) UCL	95.43 SD
	39.40 95% H-Stat (DL/2) UCL

Maximum Likelihood Estimate(MLE) Method
 MLE yields a negative mean

N/A	Log ROS Method
	Mean in Log Scale
	SD in Log Scale
	Mean in Original Scale
	SD in Original Scale
	95% t UCL
	95% Percentile Bootstrap UCL
	95% BCA Bootstrap UCL
	95% H-UCL

Gamma Distribution Test with Detected Values Only
 k star (bias corrected)

Theta Star	Data Distribution Test with Detected Values Only
nu star	0.24 Data do not follow a Discernable Distribution (0.05)
	138.10
	21.72

A-D Test Statistic
 5% A-D Critical Value
 K-S Test Statistic
 5% K-S Critical Value
 Data not Gamma Distributed at 5% Significance Level

4.60	Nonparametric Statistics
0.89	Kaplan-Meier (KM) Method
0.89	Mean
0.15	SD
SE of Mean	11.22

95% KM (t) UCL 39.35

95% KM (z) UCL 39.11

95% KM (jackknife) UCL 39.27

0.00 95% KM (bootstrap t) UCL 167.00

600.00 95% KM (BCA) UCL 42.35

20.55 95% KM (Percentile Bootstrap) UCL 43.09

0.19 95% KM (Chebyshev) UCL 69.57

95.48 97.5% KM (Chebyshev) UCL 90.73

0.11 99% KM (Chebyshev) UCL 132.30

192.70 15.56 Potential UCLs to Use

7.66 97.5% KM (Chebyshev) UCL 90.73

41.77 42.39

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

1,1-Dichloroethene

General Statistics

Number of Valid Data	71.00	Number of Detected Data	20.00
Number of Distinct Detected Data	16.00	Number of Non-Detect Data	51.00
		Percent Non-Detects	0.72

Raw Statistics

Minimum Detected	0.23	Log-transformed Statistics Minimum Detected	-1.47
Maximum Detected	230.00	Maximum Detected	5.44
Mean of Detected	51.86	Mean of Detected	2.32
SD of Detected	77.69	SD of Detected	2.24
Minimum Non-Detect	0.50	Minimum Non-Detect	-0.69
Maximum Non-Detect	16.00	Maximum Non-Detect	2.77

Note: Data have multiple DLs - Use of KM Method is recommended. Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods), Number treated as Detected
 Observations < Largest ND are treated as NDs Single DL Non-Detect Percentage

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic	0.68 Shapiro Wilk Test Statistic
5% Shapiro Wilk Critical Value	0.91 5% Shapiro Wilk Critical Value
Data not Normal at 5% Significance Level	Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution
Mean	DL/2 Substitution Method
SD	15.09 Mean
95% DL/2 (t) UCL	46.67 SD
	24.32 95% H-Stat (DL/2) UCL

Maximum Likelihood Estimate(MLE) Method

MLE yields a negative mean	N/A	Log ROS Method
		Mean in Log Scale
		SD in Log Scale
		Mean in Original Scale
		SD in Original Scale
		95% t UCL
		95% Percentile Bootstrap UCL
		95% BCA Bootstrap UCL
		95% H-UCL

Gamma Distribution Test with Detected Values Only

k star (bias corrected)	0.38	Data Distribution Test with Detected Values Only
Theta Star	137.80	Data appear Gamma Distributed at 5% Significance Level
nu star	15.05	

A-D Test Statistic

5% A-D Critical Value	0.60	Nonparametric Statistics
K-S Test Statistic	0.82	Kaplan-Meier (KM) Method
5% K-S Critical Value	0.82	Mean
Data appear Gamma Distributed at 5% Significance Level	0.21	SD
		SE of Mean

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data	0.00	95% KM (bootstrap t) UCL
Minimum	230.00	95% KM (BCA) UCL
Maximum	14.65	95% KM (Percentile Bootstrap) UCL
Mean	0.00	95% KM (Chebyshev) UCL
Median	46.79	97.5% KM (Chebyshev) UCL
SD	46.79	99% KM (Chebyshev) UCL
k star	0.08	99% KM (Chebyshev) UCL
Theta star	187.30	
Nu star	11.11	Potential UCLs to Use
AppChi2	4.65	95% KM (t) UCL

95% Gamma Approximate UCL
 95% Adjusted Gamma UCL
 Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

1,2,4-Trichlorobenzene

General Statistics			
Number of Valid Data	70.00	Number of Detected Data	2.00
Number of Distinct Detected Data	2.00	Number of Non-Detect Data	68.00
Percent Non-Detects	0.97		
Raw Statistics			
Minimum Detected	0.19	Log-transformed Statistics	-1.66
Maximum Detected	77.00	Minimum Detected	4.34
Mean of Detected	38.60	Maximum Detected	1.34
SD of Detected	54.31	Mean of Detected	4.25
Minimum Non-Detect	0.50	SD of Detected	-0.69
Maximum Non-Detect	50.00	Minimum Non-Detect	3.91
Note: Data have multiple DLs - Use of KM Method is recommended.			
Number treated as Non-Detect		Number treated as Non-Detect	69.00
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1.00
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	0.99

Warning: Data set has only 2 Distinct Detected Values.

This may not be adequate enough to compute meaningful and reliable test statistics and estimates.

The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.

However, results obtained using 4 to 9 distinct values may not be reliable.

It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	N/A	Shapiro Wilk Test Statistic	N/A
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.19	Mean	-0.93
SD	9.65	SD	1.22
95% DL/2 (t) UCL	4.11	95% H-Stat (DL/2) UCL	1.13
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
MLE method failed to converge properly	N/A	Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% t UCL	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
		95% H-UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
K star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic		Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	1.29
5% K-S Critical Value	N/A	SD	9.12
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.54
		95% KM (t) UCL	3.86
Assuming Gamma Distribution		95% KM (z) UCL	3.82
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	51.11
Minimum	N/A	95% KM (bootstrap t) UCL	1.29
Maximum	N/A	95% KM (BCA) UCL	77.00
Mean	N/A	95% KM (Percentile Bootstrap) UCL	77.00
Median	N/A	95% KM (Chebyshev) UCL	8.00
SD	N/A	97.5% KM (Chebyshev) UCL	10.91
k star	N/A	99% KM (Chebyshev) UCL	16.62
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	97.5% KM (Chebyshev) UCL	10.91
95% Gamma Approximate UCL	N/A		
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

For additional insight, the user may want to consult a statistician.

1,2-Dichloroethane

General Statistics

Number of Valid Data	71.00	Number of Detected Data	22.00
Number of Distinct Detected Data	22.00	Number of Non-Detect Data	49.00
		Percent Non-Detects	0.69

Raw Statistics

Minimum Detected	0.46	Log-transformed Statistics Minimum Detected	-0.78
Maximum Detected	120.00	Maximum Detected	4.79
Mean of Detected	22.21	Mean of Detected	1.98
SD of Detected	31.55	SD of Detected	1.75
Minimum Non-Detect	0.50	Minimum Non-Detect	-0.69
Maximum Non-Detect	16.00	Maximum Non-Detect	2.77

Note: Data have multiple DLs - Use of KM Method is recommended. Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods), Number treated as Detected
 Observations < Largest ND are treated as NDs Single DL Non-Detect Percentage

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic	0.71 Shapiro Wilk Test Statistic
5% Shapiro Wilk Critical Value	0.91 5% Shapiro Wilk Critical Value
Data not Normal at 5% Significance Level	Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution
Mean	DL/2 Substitution Method
SD	7.31 Mean
95% DL/2 (t) UCL	20.03 SD
	11.28 95% H-Stat (DL/2) UCL

Maximum Likelihood Estimate(MLE) Method

MLE yields a negative mean	N/A	Log ROS Method
		Mean in Log Scale
		SD in Log Scale
		Mean in Original Scale
		SD in Original Scale
		95% t UCL
		95% Percentile Bootstrap UCL
		95% BCA Bootstrap UCL
		95% H-UCL

Gamma Distribution Test with Detected Values Only

k star (bias corrected)	Data Distribution Test with Detected Values Only
Theta Star	0.51 Data appear Gamma Distributed at 5% Significance Level
nu star	43.55

A-D Test Statistic

5% A-D Critical Value	0.80 Kaplan-Meier (KM) Method
K-S Test Statistic	0.80 Mean
5% K-S Critical Value	0.20 SD
Data appear Gamma Distributed at 5% Significance Level	SE of Mean

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data	0.53 Nonparametric Statistics
Minimum	0.80 Kaplan-Meier (KM) Method
Maximum	0.80 Mean
Mean	0.20 SD
Median	SE of Mean
SD	95% KM (t) UCL
k star	95% KM (z) UCL
Theta star	95% KM (jackknife) UCL
Nu star	0.00 95% KM (bootstrap t) UCL
AppChi2	120.00 95% KM (BCA) UCL
95% Gamma Approximate UCL	6.88 95% KM (Percentile Bootstrap) UCL
95% Adjusted Gamma UCL	0.00 95% KM (Chebyshev) UCL
	20.14 97.5% KM (Chebyshev) UCL
	0.08 99% KM (Chebyshev) UCL
Note: DL/2 is not a recommended method.	31.28
	82.62
	11.83 Potential UCLs to Use
	5.12 95% KM (t) UCL
	15.92
	16.21

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

1,2-Dichloropropane

General Statistics

Number of Valid Data	70.00	Number of Detected Data	4.00
Number of Distinct Detected Data	2.00	Number of Non-Detect Data	66.00
		Percent Non-Detects	0.94

Raw Statistics

Minimum Detected	0.96	Log-transformed Statistics	
Maximum Detected	1.10	Minimum Detected	-0.04
Mean of Detected	1.07	Maximum Detected	0.10
SD of Detected	0.07	Mean of Detected	0.06
Minimum Non-Detect	0.50	SD of Detected	0.07
Maximum Non-Detect	50.00	Minimum Non-Detect	-0.69
		Maximum Non-Detect	3.91

Note: Data have multiple DLs - Use of KM Method is recommended.	Number treated as Non-Detect	70.00
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0.00
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	1.00

Warning: Data set has only 2 Distinct Detected Values.

This may not be adequate enough to compute meaningful and reliable test statistics and estimates.

The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.

However, results obtained using 4 to 9 distinct values may not be reliable.

It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.63 Shapiro Wilk Test Statistic	0.63
5% Shapiro Wilk Critical Value	0.75 5% Shapiro Wilk Critical Value	0.75
Data not Normal at 5% Significance Level	Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution	
Mean	DL/2 Substitution Method	
SD	1.14 Mean	-0.92
95% DL/2 (t) UCL	3.28 SD	1.06
	1.79 95% H-Stat (DL/2) UCL	0.93

Maximum Likelihood Estimate(MLE) Method
MLE method failed to converge properly

N/A	Log ROS Method	
	Mean in Log Scale	-0.27
	SD in Log Scale	0.16
	Mean in Original Scale	0.77
	SD in Original Scale	0.13
	95% t UCL	0.80
	95% Percentile Bootstrap UCL	0.80
	95% BCA Bootstrap UCL	0.80
	95% H-UCL	0.80

Gamma Distribution Test with Detected Values Only
K star (bias corrected)
Theta Star
nu star

73.84	Data Distribution Test with Detected Values Only	
0.01	Data do not follow a Discernable Distribution (0.05)	
590.70		

A-D Test Statistic
5% A-D Critical Value
K-S Test Statistic
5% K-S Critical Value
Data not Gamma Distributed at 5% Significance Level

0.96	Nonparametric Statistics	
0.66	Kaplan-Meier (KM) Method	
0.66	Mean	0.97
0.39	SD	0.03
	SE of Mean	0.00
	95% KM (t) UCL	0.97
	95% KM (z) UCL	0.97
	95% KM (jackknife) UCL	1.06

Assuming Gamma Distribution
Gamma ROS Statistics using Extrapolated Data

0.00	95% KM (bootstrap t) UCL	0.97
1.10	95% KM (BCA) UCL	1.10
0.17	95% KM (Percentile Bootstrap) UCL	1.10
0.00	95% KM (Chebyshev) UCL	0.99
0.33	97.5% KM (Chebyshev) UCL	1.00
0.10	99% KM (Chebyshev) UCL	1.01

k star

1.66		
14.46	Potential UCLs to Use	
6.88	95% KM (t) UCL	0.97
0.36	95% KM (% Bootstrap) UCL	1.10

Nu star

0.00	95% KM (t) UCL	0.97
0.36	95% KM (% Bootstrap) UCL	1.10

AppChi2

0.00	95% KM (t) UCL	0.97
0.36	95% KM (% Bootstrap) UCL	1.10

95% Gamma Approximate UCL

0.00	95% KM (t) UCL	0.97
0.36	95% KM (% Bootstrap) UCL	1.10

95% Adjusted Gamma UCL

0.00	95% KM (t) UCL	0.97
0.36	95% KM (% Bootstrap) UCL	1.10

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

For additional insight, the user may want to consult a statistician.

1,4-Dioxane

General Statistics

Number of Valid Data	46.00	Number of Detected Data	36.00
Number of Distinct Detected Data	34.00	Number of Non-Detect Data	10.00
		Percent Non-Detects	0.22

Raw Statistics

	Log-transformed Statistics	
Minimum Detected	0.47 Minimum Detected	-0.76
Maximum Detected	4300.00 Maximum Detected	8.37
Mean of Detected	532.20 Mean of Detected	3.22
SD of Detected	1160.00 SD of Detected	2.89
Minimum Non-Detect	2.00 Minimum Non-Detect	0.69
Maximum Non-Detect	2.00 Maximum Non-Detect	0.69

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.52 Shapiro Wilk Test Statistic	0.91
5% Shapiro Wilk Critical Value	0.94 5% Shapiro Wilk Critical Value	0.94
Data not Normal at 5% Significance Level	Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution

	Assuming Lognormal Distribution	
DL/2 Substitution Method	DL/2 Substitution Method	
Mean	416.70 Mean	2.52
SD	1047.00 SD	2.88
95% DL/2 (t) UCL	676.00 95% H-Stat (DL/2) UCL	6294.00

Maximum Likelihood Estimate(MLE) Method

MLE yields a negative mean

N/A	Log ROS Method	
	Mean in Log Scale	2.47
	SD in Log Scale	3.00
	Mean in Original Scale	416.90
	SD in Original Scale	1047.00
	95% t UCL	676.20
	95% Percentile Bootstrap UCL	677.90
	95% BCA Bootstrap UCL	754.70
	95% H-UCL	10122.00

Gamma Distribution Test with Detected Values Only

k star (bias corrected)
Theta Star
nu star

0.23	Data Distribution Test with Detected Values Only	
	Data do not follow a Discernable Distribution (0.05)	

A-D Test Statistic

5% A-D Critical Value
K-S Test Statistic
5% K-S Critical Value
Data not Gamma Distributed at 5% Significance Level

2.25	Nonparametric Statistics	
0.89	Kaplan-Meier (KM) Method	
0.89	Mean	416.70
0.16	SD	1036.00
	SE of Mean	154.90
	95% KM (t) UCL	676.80
	95% KM (z) UCL	671.50
	95% KM (jackknife) UCL	676.00
0.00	95% KM (bootstrap t) UCL	792.80
4300.00	95% KM (BCA) UCL	683.80
416.50	95% KM (Percentile Bootstrap) UCL	688.70
5.20	95% KM (Chebyshev) UCL	1092.00
1047.00	97.5% KM (Chebyshev) UCL	1384.00
0.13	99% KM (Chebyshev) UCL	1958.00

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data
Minimum
Maximum
Mean
Median
SD
k star
Theta star
Nu star
AppChi2
95% Gamma Approximate UCL
95% Adjusted Gamma UCL

3252.00	11.78 Potential UCLs to Use	
	5.08 99% KM (Chebyshev) UCL	1958.00
965.30		
993.20		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Acetone

General Statistics

Number of Valid Data	72.00	Number of Detected Data	13.00
Number of Distinct Detected Data	13.00	Number of Non-Detect Data	59.00
		Percent Non-Detects	0.82

Raw Statistics

Minimum Detected	2.80	Log-transformed Statistics Minimum Detected	1.03
Maximum Detected	3100.00	Maximum Detected	8.04
Mean of Detected	345.10	Mean of Detected	3.38
SD of Detected	879.70	SD of Detected	2.17
Minimum Non-Detect	5.00	Minimum Non-Detect	1.61
Maximum Non-Detect	180.00	Maximum Non-Detect	5.19

Note: Data have multiple DLs - Use of KM Method is recommended. Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods), Number treated as Detected
 Observations < Largest ND are treated as NDs Single DL Non-Detect Percentage

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic	0.46 Shapiro Wilk Test Statistic
5% Shapiro Wilk Critical Value	0.87 5% Shapiro Wilk Critical Value
Data not Normal at 5% Significance Level	Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution
Mean	DL/2 Substitution Method
SD	69.11 Mean
95% DL/2 (t) UCL	384.80 SD
	144.70 95% H-Stat (DL/2) UCL

Maximum Likelihood Estimate(MLE) Method

MLE method failed to converge properly	N/A	Log ROS Method
		Mean in Log Scale
		SD in Log Scale
		Mean in Original Scale
		SD in Original Scale
		95% t UCL
		95% Percentile Bootstrap UCL
		95% BCA Bootstrap UCL
		95% H-UCL

Gamma Distribution Test with Detected Values Only

k star (bias corrected)	0.27	Data Distribution Test with Detected Values Only
Theta Star	1283.00	0.27 Data appear Lognormal at 5% Significance Level
nu star	6.99	

A-D Test Statistic

5% A-D Critical Value	0.84 Kaplan-Meier (KM) Method
K-S Test Statistic	0.84 Mean
5% K-S Critical Value	0.26 SD
Data not Gamma Distributed at 5% Significance Level	SE of Mean

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data	1.56 Nonparametric Statistics
Minimum	0.84 Kaplan-Meier (KM) Method
Maximum	0.84 Mean
Mean	0.26 SD
Median	SE of Mean
SD	95% KM (t) UCL
k star	95% KM (z) UCL
Theta star	95% KM (jackknife) UCL
Nu star	0.00 95% KM (bootstrap t) UCL
AppChi2	3100.00 95% KM (BCA) UCL
95% Gamma Approximate UCL	68.40 95% KM (Percentile Bootstrap) UCL
95% Adjusted Gamma UCL	0.00 95% KM (Chebyshev) UCL
	385.70 97.5% KM (Chebyshev) UCL
	0.07 99% KM (Chebyshev) UCL
Note: DL/2 is not a recommended method.	1001.00 9.84 Potential UCLs to Use
	175.20 3.84 97.5% KM (Chebyshev) UCL
	178.70

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Benzene

General Statistics

Number of Valid Data	72.00	Number of Detected Data	23.00
Number of Distinct Detected Data	20.00	Number of Non-Detect Data	49.00
		Percent Non-Detects	0.68

Raw Statistics

Minimum Detected	0.10	Log-transformed Statistics Minimum Detected	-2.30
Maximum Detected	420.00	Maximum Detected	6.04
Mean of Detected	36.45	Mean of Detected	0.41
SD of Detected	110.60	SD of Detected	2.41
Minimum Non-Detect	0.50	Minimum Non-Detect	-0.69
Maximum Non-Detect	50.00	Maximum Non-Detect	3.91

Note: Data have multiple DLs - Use of KM Method is recommended. Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods), Number treated as Detected
 Observations < Largest ND are treated as NDs Single DL Non-Detect Percentage

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic	0.36 Shapiro Wilk Test Statistic
5% Shapiro Wilk Critical Value	0.91 5% Shapiro Wilk Critical Value
Data not Normal at 5% Significance Level	Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution
Mean	DL/2 Substitution Method
SD	12.52 Mean
95% DL/2 (t) UCL	63.81 SD
	25.06 95% H-Stat (DL/2) UCL

Maximum Likelihood Estimate(MLE) Method
 MLE method failed to converge properly

N/A	Log ROS Method
	Mean in Log Scale
	SD in Log Scale
	Mean in Original Scale
	SD in Original Scale
	95% t UCL
	95% Percentile Bootstrap UCL
	95% BCA Bootstrap UCL
	95% H-UCL

Gamma Distribution Test with Detected Values Only
 k star (bias corrected)

Theta Star	Data Distribution Test with Detected Values Only
nu star	0.23 Data do not follow a Discernable Distribution (0.05)
	161.50
	10.38

A-D Test Statistic
 5% A-D Critical Value
 K-S Test Statistic
 5% K-S Critical Value
 Data not Gamma Distributed at 5% Significance Level

3.02 Nonparametric Statistics
0.88 Kaplan-Meier (KM) Method
0.88 Mean
0.20 SD
SE of Mean

95% KM (t) UCL
 95% KM (z) UCL
 95% KM (jackknife) UCL

0.00 95% KM (bootstrap t) UCL
 420.00 95% KM (BCA) UCL

12.27 95% KM (Percentile Bootstrap) UCL
 0.00 95% KM (Chebyshev) UCL

63.85 97.5% KM (Chebyshev) UCL
 0.08 99% KM (Chebyshev) UCL

147.80
 11.95 Potential UCLs to Use
 5.20 97.5% KM (Chebyshev) UCL

28.22
 28.72

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
 These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
 For additional insight, the user may want to consult a statistician.

Bis(2-ethylhexyl) Phthalate

General Statistics

Number of Valid Data	44.00	Number of Detected Data	4.00
Number of Distinct Detected Data	3.00	Number of Non-Detect Data	40.00
		Percent Non-Detects	0.91

Raw Statistics

Minimum Detected	4.00	Log-transformed Statistics	
Maximum Detected	7.00	Minimum Detected	1.39
Mean of Detected	5.00	Maximum Detected	1.95
SD of Detected	1.41	Mean of Detected	1.58
Minimum Non-Detect	4.80	SD of Detected	0.26
Maximum Non-Detect	10.00	Minimum Non-Detect	1.57
		Maximum Non-Detect	2.30

Note: Data have multiple DLs - Use of KM Method is recommended
For all methods (except KM, DL/2, and ROS Methods), Number treated as Non-Detect
Observations < Largest ND are treated as NDs Number treated as Detected Single DL Non-Detect Percentage

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.83 Shapiro Wilk Test Statistic	0.85
5% Shapiro Wilk Critical Value	0.75 5% Shapiro Wilk Critical Value	0.75
Data appear Normal at 5% Significance Level	Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution	Assuming Lognormal Distribution	
DL/2 Substitution Method	DL/2 Substitution Method	
Mean	4.43 Mean	1.45
SD	1.12 SD	0.30
95% DL/2 (t) UCL	4.72 95% H-Stat (DL/2) UCL	4.84

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	1.44
		SD in Log Scale	0.20
		Mean in Original Scale	4.30
		SD in Original Scale	0.89
		95% t UCL	4.52
		95% Percentile Bootstrap UCL	4.52
		95% BCA Bootstrap UCL	4.53
		95% H-UCL	4.52

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	4.76	Data appear Normal at 5% Significance Level	
Theta Star	1.05		
nu star	38.09		
A-D Test Statistic	0.46	Nonparametric Statistics	
5% A-D Critical Value	0.66	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.66	Mean	4.30
5% K-S Critical Value	0.39	SD	0.80
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.25
		95% KM (t) UCL	4.72
Assuming Gamma Distribution		95% KM (z) UCL	4.71
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.69
Minimum	1.04	95% KM (bootstrap t) UCL	5.01
Maximum	7.00	95% KM (BCA) UCL	N/A
Mean	4.31	95% KM (Percentile Bootstrap) UCL	5.44
Median	4.41	95% KM (Chebyshev) UCL	5.39
SD	1.23	97.5% KM (Chebyshev) UCL	5.86
k star	9.00	99% KM (Chebyshev) UCL	6.78
Theta star	0.48		
Nu star	791.50	Potential UCLs to Use	
AppChi2	727.30	95% KM (t) UCL	4.72
95% Gamma Approximate UCL	4.69	95% KM (Percentile Bootstrap) UCL	5.44
95% Adjusted Gamma UCL			
	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Bromodichloromethane

General Statistics

Number of Valid Data	72.00	Number of Detected Data	18.00
Number of Distinct Detected Data	16.00	Number of Non-Detect Data	54.00
		Percent Non-Detects	0.75

Raw Statistics

Minimum Detected	0.26	Log-transformed Statistics Minimum Detected	-1.35
Maximum Detected	7.20	Maximum Detected	1.97
Mean of Detected	3.99	Mean of Detected	1.07
SD of Detected	2.36	SD of Detected	1.00
Minimum Non-Detect	0.50	Minimum Non-Detect	-0.69
Maximum Non-Detect	50.00	Maximum Non-Detect	3.91

Note: Data have multiple DLs - Use of KM Method is recommended. Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods), Number treated as Detected
 Observations < Largest ND are treated as NDs Single DL Non-Detect Percentage

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic	0.92 Shapiro Wilk Test Statistic
5% Shapiro Wilk Critical Value	0.90 5% Shapiro Wilk Critical Value
Data appear Normal at 5% Significance Level	Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution
Mean	DL/2 Substitution Method
SD	1.94 Mean
95% DL/2 (t) UCL	3.61 SD
	2.64 95% H-Stat (DL/2) UCL

Maximum Likelihood Estimate(MLE) Method
 MLE method failed to converge properly

N/A	Log ROS Method
	Mean in Log Scale
	SD in Log Scale
	Mean in Original Scale
	SD in Original Scale
	95% t UCL
	95% Percentile Bootstrap UCL
	95% BCA Bootstrap UCL
	95% H-UCL

Gamma Distribution Test with Detected Values Only
 k star (bias corrected)
 Theta Star
 nu star

1.48	Data Distribution Test with Detected Values Only
	1.48 Data appear Normal at 5% Significance Level
2.69	
53.36	

A-D Test Statistic

5% A-D Critical Value	0.76 Kaplan-Meier (KM) Method
K-S Test Statistic	0.76 Mean
5% K-S Critical Value	0.21 SD
Data follow Appr. Gamma Distribution at 5% Significance Level	SE of Mean
	95% KM (t) UCL

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data	95% KM (z) UCL
Minimum	95% KM (jackknife) UCL
Maximum	0.00 95% KM (bootstrap t) UCL
Mean	7.20 95% KM (BCA) UCL
Median	1.59 95% KM (Percentile Bootstrap) UCL
SD	0.86 95% KM (Chebyshev) UCL
k star	2.04 97.5% KM (Chebyshev) UCL
Theta star	0.14 99% KM (Chebyshev) UCL
Nu star	11.01

AppChi2

95% Gamma Approximate UCL	20.79 Potential UCLs to Use
95% Adjusted Gamma UCL	11.43 95% KM (t) UCL
	2.89 95% KM (Percentile Bootstrap) UCL
	2.93

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Chlorobenzene

General Statistics

Number of Valid Data	70.00	Number of Detected Data	9.00
Number of Distinct Detected Data	9.00	Number of Non-Detect Data	61.00
		Percent Non-Detects	0.87

Raw Statistics

Minimum Detected	0.11	Log-transformed Statistics	-2.21
Maximum Detected	23.00	Minimum Detected	3.14
Mean of Detected	9.32	Mean of Detected	0.93
SD of Detected	10.30	SD of Detected	2.13
Minimum Non-Detect	0.50	Minimum Non-Detect	-0.69
Maximum Non-Detect	50.00	Maximum Non-Detect	3.91

Note: Data have multiple DLs - Use of KM Method is recommended
 Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods),
 Number treated as Detected
 Observations < Largest ND are treated as NDs
 Single DL Non-Detect Percentage

Warning: There are only 9 Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set
 the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only		
Shapiro Wilk Test Statistic	0.76	Shapiro Wilk Test Statistic	0.86
5% Shapiro Wilk Critical Value	0.83	5% Shapiro Wilk Critical Value	0.83
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution		
Mean	2.26	Mean	-0.71
SD	5.52	SD	1.41
95% DL/2 (t) UCL	3.36	95% H-Stat (DL/2) UCL	1.92

Maximum Likelihood Estimate(MLE) Method
 MLE method failed to converge properly

N/A	Log ROS Method	
	Mean in Log Scale	-1.87
	SD in Log Scale	2.01
	Mean in Original Scale	1.44
	SD in Original Scale	4.66
	95% t UCL	2.37
	95% Percentile Bootstrap UCL	2.45
	95% BCA Bootstrap UCL	2.71
	95% H-UCL	2.34

Gamma Distribution Test with Detected Values Only
 K star (bias corrected)
 Theta Star
 nu star

0.40	Data appear Gamma Distributed at 5% Significance Level
23.23	
7.22	

A-D Test Statistic
 5% A-D Critical Value
 K-S Test Statistic
 5% K-S Critical Value
 Data appear Gamma Distributed at 5% Significance Level

0.72	Nonparametric Statistics	
0.77	Kaplan-Meier (KM) Method	
0.77	Mean	1.34
0.29	SD	4.68
	SE of Mean	0.60

Assuming Gamma Distribution
 Gamma ROS Statistics using Extrapolated Data

0.00	95% KM (t) UCL	2.34
0.00	95% KM (z) UCL	2.32
0.00	95% KM (jackknife) UCL	2.29
23.00	95% KM (bootstrap t) UCL	2.90
2.35	95% KM (Percentile Bootstrap) UCL	3.35
0.00	95% KM (Chebyshev) UCL	2.65
5.01	97.5% KM (Chebyshev) UCL	3.94
0.10	99% KM (Chebyshev) UCL	5.07
23.68		7.28

Minimum
 Maximum
 Mean
 Median
 SD
 k star
 Theta star
 Nu star
 AppChi2
 95% Gamma Approximate UCL
 95% Adjusted Gamma UCL
 Note: DL/2 is not a recommended method.

13.90	Potential UCLs to Use	
6.50	95% KM (t) UCL	2.34
5.03		
5.11		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
 These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
 For additional insight, the user may want to consult a statistician.

Chloroform

General Statistics

Number of Valid Data	72.00	Number of Detected Data	34.00
Number of Distinct Detected Data	31.00	Number of Non-Detect Data	38.00
		Percent Non-Detects	0.53

Raw Statistics

Minimum Detected	0.45	Log-transformed Statistics Minimum Detected	-0.80
Maximum Detected	200.00	Maximum Detected	5.30
Mean of Detected	22.79	Mean of Detected	1.93
SD of Detected	49.42	SD of Detected	1.46
Minimum Non-Detect	0.50	Minimum Non-Detect	-0.69
Maximum Non-Detect	230.00	Maximum Non-Detect	5.44

Note: Data have multiple DLs - Use of KM Method is recommended. Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods), Number treated as Detected
 Observations < Largest ND are treated as NDs Single DL Non-Detect Percentage

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic	0.45 Shapiro Wilk Test Statistic
5% Shapiro Wilk Critical Value	0.93 5% Shapiro Wilk Critical Value
Data not Normal at 5% Significance Level	Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution
Mean	DL/2 Substitution Method
SD	12.88 Mean
95% DL/2 (t) UCL	37.48 SD
	20.24 95% H-Stat (DL/2) UCL

Maximum Likelihood Estimate(MLE) Method
 MLE method failed to converge properly

N/A	Log ROS Method
	Mean in Log Scale
	SD in Log Scale
	Mean in Original Scale
	SD in Original Scale
	95% t UCL
	95% Percentile Bootstrap UCL
	95% BCA Bootstrap UCL
	95% H-UCL

Gamma Distribution Test with Detected Values Only
 k star (bias corrected)
 Theta Star
 nu star

0.50	Data Distribution Test with Detected Values Only
	0.50 Data appear Lognormal at 5% Significance Level

A-D Test Statistic
 5% A-D Critical Value
 K-S Test Statistic
 5% K-S Critical Value
 Data not Gamma Distributed at 5% Significance Level

2.80	Nonparametric Statistics
0.81	Kaplan-Meier (KM) Method
0.81	Mean
0.16	SD
	SE of Mean

95% KM (t) UCL 4.27

Assuming Gamma Distribution
 Gamma ROS Statistics using Extrapolated Data

95% KM (z) UCL 18.40

Minimum

95% KM (jackknife) UCL 18.31

Maximum

0.00 95% KM (bootstrap t) UCL 40.94

Mean

200.00 95% KM (BCA) UCL 18.48

Median

10.76 95% KM (Percentile Bootstrap) UCL 18.76

SD

0.00 95% KM (Chebyshev) UCL 29.91

k star

35.59 97.5% KM (Chebyshev) UCL 37.97

Theta star

0.10 99% KM (Chebyshev) UCL 53.80

Nu star

108.80 14.24 Potential UCLs to Use

AppChi2

6.74 95% KM (BCA) UCL 18.48

95% Gamma Approximate UCL

22.75

95% Adjusted Gamma UCL

23.11

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

cis-1,2-Dichloroethene

General Statistics

Number of Valid Data	71.00	Number of Detected Data	51.00
Number of Distinct Detected Data	47.00	Number of Non-Detect Data	20.00
		Percent Non-Detects	0.28

Raw Statistics

Minimum Detected	0.11	Log-transformed Statistics Minimum Detected	-2.21
Maximum Detected	910.00	Maximum Detected	6.81
Mean of Detected	110.10	Mean of Detected	1.57
SD of Detected	240.80	SD of Detected	2.75
Minimum Non-Detect	0.50	Minimum Non-Detect	-0.69
Maximum Non-Detect	10.00	Maximum Non-Detect	2.30

Note: Data have multiple DLs - Use of KM Method is recommended. Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods), Number treated as Detected
 Observations < Largest ND are treated as NDs Single DL Non-Detect Percentage

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Lilliefors Test Statistic	0.38 Lilliefors Test Statistic
5% Lilliefors Critical Value	0.12 5% Lilliefors Critical Value
Data not Normal at 5% Significance Level	Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution
Mean	DL/2 Substitution Method
SD	79.33 Mean
95% DL/2 (t) UCL	209.40 SD
	120.80 95% H-Stat (DL/2) UCL
	305.90

Maximum Likelihood Estimate(MLE) Method

MLE yields a negative mean	N/A	Log ROS Method
		Mean in Log Scale
		SD in Log Scale
		Mean in Original Scale
		SD in Original Scale
		95% t UCL
		95% Percentile Bootstrap UCL
		95% BCA Bootstrap UCL
		95% H-UCL
		0.59
		2.92
		79.22
		209.50
		120.70
		123.30
		131.60
		653.60

Gamma Distribution Test with Detected Values Only

k star (bias corrected)	Data Distribution Test with Detected Values Only
Theta Star	0.23 Data do not follow a Discernable Distribution (0.05)
nu star	479.80
	23.42

A-D Test Statistic

5% A-D Critical Value	0.89 Kaplan-Meier (KM) Method
K-S Test Statistic	0.89 Mean
5% K-S Critical Value	0.14 SD
Data not Gamma Distributed at 5% Significance Level	SE of Mean
	95% KM (t) UCL
	95% KM (z) UCL
	95% KM (jackknife) UCL
	0.00 95% KM (bootstrap t) UCL
	910.00 95% KM (BCA) UCL
	79.12 95% KM (Percentile Bootstrap) UCL
	0.85 95% KM (Chebyshev) UCL
	209.50 97.5% KM (Chebyshev) UCL
	0.12 99% KM (Chebyshev) UCL
	327.30

Assuming Gamma Distribution

Minimum	0.00 95% KM (bootstrap t) UCL
Maximum	910.00 95% KM (BCA) UCL
Mean	79.12 95% KM (Percentile Bootstrap) UCL
Median	0.85 95% KM (Chebyshev) UCL
SD	209.50 97.5% KM (Chebyshev) UCL
k star	0.12 99% KM (Chebyshev) UCL
Theta star	677.20
Nu star	16.59 Potential UCLs to Use
AppChi2	8.38 97.5% KM (Chebyshev) UCL
95% Gamma Approximate UCL	156.60
95% Adjusted Gamma UCL	158.90

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Dibromochloromethane

General Statistics

Number of Valid Data	72.00	Number of Detected Data	16.00
Number of Distinct Detected Data	13.00	Number of Non-Detect Data	56.00
		Percent Non-Detects	0.78

Raw Statistics

Minimum Detected	0.23	Log-transformed Statistics Minimum Detected	-1.47
Maximum Detected	2.60	Maximum Detected	0.96
Mean of Detected	1.47	Mean of Detected	0.20
SD of Detected	0.80	SD of Detected	0.70
Minimum Non-Detect	0.50	Minimum Non-Detect	-0.69
Maximum Non-Detect	50.00	Maximum Non-Detect	3.91

Note: Data have multiple DLs - Use of KM Method is recommended. Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods), Number treated as Detected
 Observations < Largest ND are treated as NDs Single DL Non-Detect Percentage

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic	0.92 Shapiro Wilk Test Statistic
5% Shapiro Wilk Critical Value	0.89 5% Shapiro Wilk Critical Value
Data appear Normal at 5% Significance Level	Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution
Mean	DL/2 Substitution Method
SD	1.30 Mean
95% DL/2 (t) UCL	3.22 SD
	1.93 95% H-Stat (DL/2) UCL

Maximum Likelihood Estimate(MLE) Method
 MLE method failed to converge properly

N/A	Log ROS Method
	Mean in Log Scale
	SD in Log Scale
	Mean in Original Scale
	SD in Original Scale
	95% t UCL
	95% Percentile Bootstrap UCL
	95% BCA Bootstrap UCL
	95% H-UCL

Gamma Distribution Test with Detected Values Only
 k star (bias corrected)
 Theta Star
 nu star

2.35	Data Distribution Test with Detected Values Only
	2.35 Data appear Normal at 5% Significance Level
0.63	
75.04	

A-D Test Statistic
 5% A-D Critical Value
 K-S Test Statistic
 5% K-S Critical Value
 Data appear Gamma Distributed at 5% Significance Level

0.47	Nonparametric Statistics
0.75	Kaplan-Meier (KM) Method
0.75	Mean
0.22	SD
	SE of Mean

Assuming Gamma Distribution
 Gamma ROS Statistics using Extrapolated Data
 Minimum
 Maximum
 Mean
 Median
 SD
 k star
 Theta star
 Nu star
 AppChi2
 95% Gamma Approximate UCL
 95% Adjusted Gamma UCL

0.00	95% KM (bootstrap t) UCL
2.60	95% KM (BCA) UCL
0.49	95% KM (Percentile Bootstrap) UCL
0.05	95% KM (Chebyshev) UCL
0.71	97.5% KM (Chebyshev) UCL
0.14	99% KM (Chebyshev) UCL
3.60	
19.48	Potential UCLs to Use
10.47	95% KM (t) UCL
0.91	95% KM (Percentile Bootstrap) UCL
0.92	

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Ethylbenzene

General Statistics

Number of Valid Data	70.00	Number of Detected Data	8.00
Number of Distinct Detected Data	8.00	Number of Non-Detect Data	62.00
		Percent Non-Detects	0.89

Raw Statistics

	Raw Statistics	Log-transformed Statistics
Minimum Detected	0.15	Minimum Detected
Maximum Detected	11.00	Maximum Detected
Mean of Detected	3.20	Mean of Detected
SD of Detected	3.72	SD of Detected
Minimum Non-Detect	0.50	Minimum Non-Detect
Maximum Non-Detect	50.00	Maximum Non-Detect

Note: Data have multiple DLs - Use of KM Method is recommended
 Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods), Number treated as Detected
 Observations < Largest ND are treated as NDs Single DL Non-Detect Percentage

Warning: There are only 8 Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set
 the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic	0.80 Shapiro Wilk Test Statistic
5% Shapiro Wilk Critical Value	0.82 5% Shapiro Wilk Critical Value
Data not Normal at 5% Significance Level	Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution
Mean	DL/2 Substitution Method
SD	1.43 Mean
95% DL/2 (t) UCL	3.54 SD

Maximum Likelihood Estimate(MLE) Method

MLE method failed to converge properly	N/A	Log ROS Method
		Mean in Log Scale
		SD in Log Scale
		Mean in Original Scale
		SD in Original Scale
		95% t UCL
		95% Percentile Bootstrap UCL
		95% BCA Bootstrap UCL
		95% H-UCL

Gamma Distribution Test with Detected Values Only

K star (bias corrected)	0.56 Data appear Gamma Distributed at 5% Significance Level
Theta Star	5.69
nu star	9.01

A-D Test Statistic

5% A-D Critical Value	0.31 Nonparametric Statistics
K-S Test Statistic	0.74 Kaplan-Meier (KM) Method
5% K-S Critical Value	0.74 Mean
Data appear Gamma Distributed at 5% Significance Level	0.30 SD

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data	0.31 Nonparametric Statistics
Minimum	0.74 Kaplan-Meier (KM) Method
Maximum	0.74 Mean
Mean	0.30 SD
Median	SE of Mean
SD	95% KM (t) UCL
k star	95% KM (z) UCL
Theta star	95% KM (jackknife) UCL
nu star	0.00 95% KM (bootstrap t) UCL
AppChi2	11.00 95% KM (BCA) UCL
95% Gamma Approximate UCL	0.97 95% KM (Percentile Bootstrap) UCL
95% Adjusted Gamma UCL	0.00 95% KM (Chebyshev) UCL
	1.00 95% KM (Chebyshev) UCL
	1.75 97.5% KM (Chebyshev) UCL
	0.11 99% KM (Chebyshev) UCL
	8.44 Potential UCLs to Use
	16.02 Potential UCLs to Use
	7.98 95% KM (t) UCL
	1.94
	1.97

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
 These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
 For additional insight, the user may want to consult a statistician.

Methyl Cyclohexane

General Statistics

Number of Valid Data	70.00	Number of Detected Data	4.00
Number of Distinct Detected Data	4.00	Number of Non-Detect Data	66.00
		Percent Non-Detects	0.94

Raw Statistics

Minimum Detected	0.20	Log-transformed Statistics	-1.61
Maximum Detected	1.20	Maximum Detected	0.18
Mean of Detected	0.80	Mean of Detected	-0.41
SD of Detected	0.43	SD of Detected	0.82
Minimum Non-Detect	0.50	Minimum Non-Detect	-0.69
Maximum Non-Detect	50.00	Maximum Non-Detect	3.91

Note: Data have multiple DLs - Use of KM Method is recommended
 Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods), Number treated as Detected
 Observations < Largest ND are treated as NDs Single DL Non-Detect Percentage

Warning: There are only 4 Distinct Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set
 the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only		
Shapiro Wilk Test Statistic	0.92	Shapiro Wilk Test Statistic	0.80
5% Shapiro Wilk Critical Value	0.75	5% Shapiro Wilk Critical Value	0.75
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution		
Mean	1.12	Mean	-0.95
SD	3.28	SD	1.06
95% DL/2 (t) UCL	1.77	95% H-Stat (DL/2) UCL	0.90

Maximum Likelihood Estimate(MLE) Method
 MLE method failed to converge properly

N/A	Log ROS Method	
	Mean in Log Scale	-1.56
	SD in Log Scale	0.70
	Mean in Original Scale	0.27
	SD in Original Scale	0.21
	95% t UCL	0.31
	95% Percentile Bootstrap UCL	0.31
	95% BCA Bootstrap UCL	0.31
	95% H-UCL	0.32

Gamma Distribution Test with Detected Values Only
 K star (bias corrected)
 Theta Star
 nu star

0.87	Data Distribution Test with Detected Values Only
	0.87 Data appear Normal at 5% Significance Level
0.93	
6.92	

A-D Test Statistic
 5% A-D Critical Value
 K-S Test Statistic
 5% K-S Critical Value
 Data appear Gamma Distributed at 5% Significance Level

0.49	Nonparametric Statistics	
0.66	Kaplan-Meier (KM) Method	
0.66	Mean	0.24
0.40	SD	0.18
	SE of Mean	0.03
	95% KM (t) UCL	0.28
	95% KM (z) UCL	0.28
	95% KM (jackknife) UCL	0.62

Assuming Gamma Distribution
 Gamma ROS Statistics using Extrapolated Data

0.00	95% KM (bootstrap t) UCL	0.26
1.20	95% KM (BCA) UCL	1.20
0.32	95% KM (Percentile Bootstrap) UCL	1.01
0.23	95% KM (Chebyshev) UCL	0.35
0.33	97.5% KM (Chebyshev) UCL	0.40
0.19	99% KM (Chebyshev) UCL	0.50

k star

1.66		
26.75	Potential UCLs to Use	
15.96	95% KM (t) UCL	0.28
0.53	95% KM (Percentile Bootstrap) UCL	1.01

Theta star

N/A		
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Nu star

--	--	--

AppChi2

--	--	--

95% Gamma Approximate UCL

--	--	--

95% Adjusted Gamma UCL

--	--	--

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
 These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
 For additional insight, the user may want to consult a statistician.

Methylene Chloride

General Statistics

Number of Valid Data	71.00	Number of Detected Data	11.00
Number of Distinct Detected Data	10.00	Number of Non-Detect Data	60.00
		Percent Non-Detects	0.85

Raw Statistics

Minimum Detected	0.13	Log-transformed Statistics Minimum Detected	-2.04
Maximum Detected	5.30	Maximum Detected	1.67
Mean of Detected	0.73	Mean of Detected	-1.10
SD of Detected	1.52	SD of Detected	0.99
Minimum Non-Detect	0.50	Minimum Non-Detect	-0.69
Maximum Non-Detect	50.00	Maximum Non-Detect	3.91

Note: Data have multiple DLs - Use of KM Method is recommended
 Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods),
 Number treated as Detected
 Observations < Largest ND are treated as NDs
 Single DL Non-Detect Percentage

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic	0.40 Shapiro Wilk Test Statistic
5% Shapiro Wilk Critical Value	0.85 5% Shapiro Wilk Critical Value
Data not Normal at 5% Significance Level	Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution
Mean	DL/2 Substitution Method
SD	1.16 Mean
95% DL/2 (t) UCL	3.29 SD
	1.81 95% H-Stat (DL/2) UCL

Maximum Likelihood Estimate(MLE) Method
 MLE method failed to converge properly

N/A	Log ROS Method
	Mean in Log Scale
	SD in Log Scale
	Mean in Original Scale
	SD in Original Scale
	95% t UCL
	95% Percentile Bootstrap UCL
	95% BCA Bootstrap UCL
	95% H-UCL

Gamma Distribution Test with Detected Values Only
 k star (bias corrected)
 Theta Star
 nu star

0.62	Data Distribution Test with Detected Values Only
0.62	Data do not follow a Discernable Distribution (0.05)

A-D Test Statistic
 5% A-D Critical Value
 K-S Test Statistic
 5% K-S Critical Value
 Data not Gamma Distributed at 5% Significance Level

2.20	Nonparametric Statistics
0.76	Kaplan-Meier (KM) Method
0.76	Mean
0.27	SD
	SE of Mean

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data	95% KM (z) UCL
Minimum	95% KM (jackknife) UCL
Maximum	0.00 95% KM (bootstrap t) UCL
Mean	5.30 95% KM (BCA) UCL
Median	0.66 95% KM (Percentile Bootstrap) UCL
SD	0.43 95% KM (Chebyshev) UCL
k star	0.85 97.5% KM (Chebyshev) UCL
Theta star	0.21 99% KM (Chebyshev) UCL
Nu star	3.14

AppChi2	29.86 Potential UCLs to Use
95% Gamma Approximate UCL	18.38 95% KM (t) UCL
95% Adjusted Gamma UCL	1.07 95% KM (% Bootstrap) UCL
	1.08

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Tetrachloroethene

General Statistics

Number of Valid Data	71.00	Number of Detected Data	33.00
Number of Distinct Detected Data	32.00	Number of Non-Detect Data	38.00
		Percent Non-Detects	0.54

Raw Statistics

Minimum Detected	0.10	Log-transformed Statistics Minimum Detected	-2.30
Maximum Detected	1000.00	Maximum Detected	6.91
Mean of Detected	119.10	Mean of Detected	1.47
SD of Detected	303.80	SD of Detected	2.71
Minimum Non-Detect	0.50	Minimum Non-Detect	-0.69
Maximum Non-Detect	16.00	Maximum Non-Detect	2.77

Note: Data have multiple DLs - Use of KM Method is recommended. Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods), Number treated as Detected
 Observations < Largest ND are treated as NDs Single DL Non-Detect Percentage

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic	0.42 Shapiro Wilk Test Statistic
5% Shapiro Wilk Critical Value	0.93 5% Shapiro Wilk Critical Value
Data not Normal at 5% Significance Level	Data not Lognormal at 5% Significance Level

Assuming Normal Distribution	Assuming Lognormal Distribution
DL/2 Substitution Method	DL/2 Substitution Method
Mean	55.72 Mean
SD	213.80 SD
95% DL/2 (t) UCL	98.03 95% H-Stat (DL/2) UCL

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method
MLE yields a negative mean		Mean in Log Scale
		SD in Log Scale
		Mean in Original Scale
		SD in Original Scale
		95% t UCL
		95% Percentile Bootstrap UCL
		95% BCA Bootstrap UCL
		95% H-UCL

Gamma Distribution Test with Detected Values Only	Data Distribution Test with Detected Values Only
k star (bias corrected)	0.22 Data do not follow a Discernable Distribution (0.05)
Theta Star	543.10
nu star	14.47

A-D Test Statistic	3.38 Nonparametric Statistics
5% A-D Critical Value	0.89 Kaplan-Meier (KM) Method
K-S Test Statistic	0.89 Mean
5% K-S Critical Value	0.17 SD
Data not Gamma Distributed at 5% Significance Level	SE of Mean

Assuming Gamma Distribution	3.38 Nonparametric Statistics
Gamma ROS Statistics using Extrapolated Data	0.89 Kaplan-Meier (KM) Method
Minimum	0.89 Mean
Maximum	0.17 SD
Mean	SE of Mean
Median	95% KM (t) UCL
SD	95% KM (z) UCL
k star	95% KM (jackknife) UCL
Theta star	0.00 95% KM (bootstrap t) UCL
Nu star	1000.00 95% KM (BCA) UCL
AppChi2	55.33 95% KM (Percentile Bootstrap) UCL
95% Gamma Approximate UCL	0.00 95% KM (Chebyshev) UCL
95% Adjusted Gamma UCL	213.90 97.5% KM (Chebyshev) UCL
	0.08 99% KM (Chebyshev) UCL
Note: DL/2 is not a recommended method.	658.10
	11.94 Potential UCLs to Use
	5.19 97.5% KM (Chebyshev) UCL
	127.40
	129.70

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Trichloroethene

General Statistics

Number of Valid Data	72.00	Number of Detected Data	51.00
Number of Distinct Detected Data	47.00	Number of Non-Detect Data	21.00
		Percent Non-Detects	0.29

Raw Statistics

Minimum Detected	0.12	Log-transformed Statistics Minimum Detected	-2.12
Maximum Detected	3600.00	Maximum Detected	8.19
Mean of Detected	281.20	Mean of Detected	1.80
SD of Detected	851.50	SD of Detected	2.92
Minimum Non-Detect	0.50	Minimum Non-Detect	-0.69
Maximum Non-Detect	10.00	Maximum Non-Detect	2.30

Note: Data have multiple DLs - Use of KM Method is recommended. Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods), Number treated as Detected
 Observations < Largest ND are treated as NDs Single DL Non-Detect Percentage

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Lilliefors Test Statistic	0.43 Lilliefors Test Statistic
5% Lilliefors Critical Value	0.12 5% Lilliefors Critical Value
Data not Normal at 5% Significance Level	Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution
Mean	DL/2 Substitution Method
SD	199.40 Mean
95% DL/2 (t) UCL	726.00 SD
	342.00 95% H-Stat (DL/2) UCL

Maximum Likelihood Estimate(MLE) Method

MLE yields a negative mean	N/A	Log ROS Method
		Mean in Log Scale
		SD in Log Scale
		Mean in Original Scale
		SD in Original Scale
		95% t UCL
		95% Percentile Bootstrap UCL
		95% BCA Bootstrap UCL
		95% H-UCL

Gamma Distribution Test with Detected Values Only

k star (bias corrected)	0.19	Data Distribution Test with Detected Values Only
Theta Star	1447.00	0.19 Data do not follow a Discernable Distribution (0.05)
nu star	19.82	

A-D Test Statistic

5% A-D Critical Value	0.91 Kaplan-Meier (KM) Method
K-S Test Statistic	0.91 Mean
5% K-S Critical Value	0.14 SD
Data not Gamma Distributed at 5% Significance Level	SE of Mean

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data	5.16 Nonparametric Statistics
Minimum	0.91 Kaplan-Meier (KM) Method
Maximum	0.91 Mean
Mean	0.14 SD
Median	SE of Mean
SD	95% KM (t) UCL
k star	95% KM (z) UCL
Theta star	95% KM (jackknife) UCL
Nu star	0.00 95% KM (bootstrap t) UCL
AppChi2	3600.00 95% KM (BCA) UCL
95% Gamma Approximate UCL	199.20 95% KM (Percentile Bootstrap) UCL
95% Adjusted Gamma UCL	0.85 95% KM (Chebyshev) UCL
	726.00 97.5% KM (Chebyshev) UCL
	0.11 99% KM (Chebyshev) UCL
Note: DL/2 is not a recommended method.	1882.00
	15.24 Potential UCLs to Use
	7.43 97.5% KM (Chebyshev) UCL
	408.60
	414.80

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Vinyl Chloride

General Statistics

Number of Valid Data	72.00	Number of Detected Data	19.00
Number of Distinct Detected Data	19.00	Number of Non-Detect Data	53.00
		Percent Non-Detects	0.74

Raw Statistics

Minimum Detected	0.21	Log-transformed Statistics Minimum Detected	-1.56
Maximum Detected	150.00	Maximum Detected	5.01
Mean of Detected	25.53	Mean of Detected	1.83
SD of Detected	38.59	SD of Detected	2.02
Minimum Non-Detect	0.50	Minimum Non-Detect	-0.69
Maximum Non-Detect	100.00	Maximum Non-Detect	4.61

Note: Data have multiple DLs - Use of KM Method is recommended. Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods), Number treated as Detected
 Observations < Largest ND are treated as NDs Single DL Non-Detect Percentage

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic	0.70 Shapiro Wilk Test Statistic
5% Shapiro Wilk Critical Value	0.90 5% Shapiro Wilk Critical Value
Data not Normal at 5% Significance Level	Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution	Assuming Lognormal Distribution
DL/2 Substitution Method	DL/2 Substitution Method
Mean	7.95 Mean
SD	22.91 SD
95% DL/2 (t) UCL	12.45 95% H-Stat (DL/2) UCL

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method
MLE method failed to converge properly		Mean in Log Scale
		SD in Log Scale
		Mean in Original Scale
		SD in Original Scale
		95% t UCL
		95% Percentile Bootstrap UCL
		95% BCA Bootstrap UCL
		95% H-UCL

Gamma Distribution Test with Detected Values Only	Data Distribution Test with Detected Values Only
k star (bias corrected)	0.42 Data appear Gamma Distributed at 5% Significance Level
Theta Star	60.71
nu star	15.98
A-D Test Statistic	0.49 Nonparametric Statistics
5% A-D Critical Value	0.81 Kaplan-Meier (KM) Method
K-S Test Statistic	0.81 Mean
5% K-S Critical Value	0.21 SD
Data appear Gamma Distributed at 5% Significance Level	SE of Mean
	95% KM (t) UCL
	95% KM (z) UCL
	95% KM (jackknife) UCL
Assuming Gamma Distribution	0.00 95% KM (bootstrap t) UCL
Gamma ROS Statistics using Extrapolated Data	150.00 95% KM (BCA) UCL
Minimum	6.85 95% KM (Percentile Bootstrap) UCL
Maximum	0.00 95% KM (Chebyshev) UCL
Mean	22.47 97.5% KM (Chebyshev) UCL
Median	0.08 99% KM (Chebyshev) UCL
SD	83.30
k star	11.84 Potential UCLs to Use
Theta star	5.12 95% KM (t) UCL
Nu star	15.83
AppChi2	16.11
95% Gamma Approximate UCL	11.57
95% Adjusted Gamma UCL	

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Aluminum

General Statistics

Number of Valid Data	18.00	Number of Detected Data	12.00
Number of Distinct Detected Data	11.00	Number of Non-Detect Data	6.00
		Percent Non-Detects	0.33

Raw Statistics

Minimum Detected	110.00	Minimum Detected	4.70
Maximum Detected	6730.00	Maximum Detected	8.81
Mean of Detected	959.60	Mean of Detected	6.11
SD of Detected	1850.00	SD of Detected	1.05
Minimum Non-Detect	200.00	Minimum Non-Detect	5.30
Maximum Non-Detect	200.00	Maximum Non-Detect	5.30

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic	0.46 Shapiro Wilk Test Statistic
5% Shapiro Wilk Critical Value	0.86 5% Shapiro Wilk Critical Value
Data not Normal at 5% Significance Level	Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution
Mean	DL/2 Substitution Method
SD	Mean
95% DL/2 (t) UCL	1307.00 95% H-Stat (DL/2) UCL

Maximum Likelihood Estimate(MLE) Method

Mean	57.21 Mean in Log Scale	5.46
SD	2042.00 SD in Log Scale	1.31
95% MLE (t) UCL	894.40 Mean in Original Scale	664.00
95% MLE (Tiku) UCL	993.30 SD in Original Scale	1549.00
	95% t UCL	1299.00
	95% Percentile Bootstrap UCL	1343.00
	95% BCA Bootstrap UCL	1815.00
	95% H UCL	1502.00

Gamma Distribution Test with Detected Values Only

k star (bias corrected)	0.65 Data do not follow a Discernable Distribution (0.05)
Theta Star	1488.00
nu star	15.47

A-D Test Statistic

5% A-D Critical Value	1.66 Nonparametric Statistics
K-S Test Statistic	0.76 Kaplan-Meier (KM) Method
5% K-S Critical Value	0.76 Mean
Data not Gamma Distributed at 5% Significance Level	0.25 SD
	SE of Mean

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data	95% KM (t) UCL	1319.00
Minimum	95% KM (z) UCL	1284.00
Maximum	95% KM (jackknife) UCL	1282.00
Mean	0.00 95% KM (bootstrap t) UCL	5641.00
Median	6730.00 95% KM (BCA) UCL	1457.00
SD	639.70 95% KM (Percentile Bootstrap) UCL	1378.00
K star	256.50 95% KM (Chebyshev) UCL	2286.00
Theta star	1559.00 97.5% KM (Chebyshev) UCL	2983.00
Nu star	0.13 99% KM (Chebyshev) UCL	4352.00
AppChi2	4840.00	
95% Gamma Approximate UCL	4.76 Potential UCLs to Use	
95% Adjusted Gamma UCL	1.04 97.5% KM (Chebyshev) UCL	2983.00

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Antimony

General Statistics

Number of Valid Data	19.00	Number of Detected Data	3.00
Number of Distinct Detected Data	3.00	Number of Non-Detect Data	16.00
		Percent Non-Detects	0.84

Raw Statistics

Minimum Detected	0.34	Log-transformed Statistics	-1.08
Maximum Detected	1.60	Maximum Detected	0.47
Mean of Detected	0.82	Mean of Detected	-0.42
SD of Detected	0.68	SD of Detected	0.80
Minimum Non-Detect	2.00	Minimum Non-Detect	0.69
Maximum Non-Detect	60.00	Maximum Non-Detect	4.09

Note: Data have multiple DLs - Use of KM Method is recommended. Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods), Number treated as Detected
 Observations < Largest ND are treated as NDs Single DL Non-Detect Percentage

Warning: There are only 3 Distinct Detected Values in this data set
 The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
 Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
 However, results obtained using 4 to 9 distinct values may not be reliable.
 It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.86 Shapiro Wilk Test Statistic	0.94
5% Shapiro Wilk Critical Value	0.77 5% Shapiro Wilk Critical Value	0.77
Data appear Normal at 5% Significance Level	Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution	Assuming Lognormal Distribution	
DL/2 Substitution Method	DL/2 Substitution Method	
Mean	14.71 Mean	1.55
SD	14.91 SD	1.84
95% DL/2 (t) UCL	20.64 95% H-Stat (DL/2) UCL	139.80

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.42
		SD in Log Scale	0.86
		Mean in Original Scale	0.92
		SD in Original Scale	0.78
		95% t UCL	1.23
		95% Percentile Bootstrap UCL	1.21
		95% BCA Bootstrap UCL	1.27
		95% H-UCL	1.55

Gamma Distribution Test with Detected Values Only	N/A	Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data appear Normal at 5% Significance Level	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.82
5% K-S Critical Value	N/A	SD	0.56
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.39
		95% KM (t) UCL	1.50
		95% KM (z) UCL	1.47
		95% KM (jackknife) UCL	1.63
		95% KM (bootstrap t) UCL	4.62
Assuming Gamma Distribution	N/A	95% KM (BCA) UCL	1.60
Gamma ROS Statistics using Extrapolated Data	N/A	95% KM (Percentile Bootstrap) UCL	N/A
Minimum	N/A	95% KM (Chebyshev) UCL	2.54
Maximum	N/A	97.5% KM (Chebyshev) UCL	3.28
Mean	N/A	99% KM (Chebyshev) UCL	4.74
Median	N/A		
SD	N/A		
k star	N/A		
Theta star	N/A	Potential UCLs to Use	
Nu star	N/A	95% KM (t) UCL	1.50
AppChi2	N/A	95% KM (Percentile Bootstrap) UCL	N/A
95% Gamma Approximate UCL	N/A		
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Arsenic

General Statistics

Number of Valid Data	19.00	Number of Detected Data	10.00
Number of Distinct Detected Data	9.00	Number of Non-Detect Data	9.00
		Percent Non-Detects	0.47

Raw Statistics

Minimum Detected	0.24	Log-transformed Statistics Minimum Detected	-1.43
Maximum Detected	2.80	Maximum Detected	1.03
Mean of Detected	1.37	Mean of Detected	0.07
SD of Detected	0.94	SD of Detected	0.79
Minimum Non-Detect	1.00	Minimum Non-Detect	0.00
Maximum Non-Detect	10.00	Maximum Non-Detect	2.30

Note: Data have multiple DLs - Use of KM Method is recommended. Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods), Number treated as Detected
 Observations < Largest ND are treated as NDs Single DL Non-Detect Percentage

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic	0.88 Shapiro Wilk Test Statistic
5% Shapiro Wilk Critical Value	0.84 5% Shapiro Wilk Critical Value
Data appear Normal at 5% Significance Level	Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution
Mean	DL/2 Substitution Method
SD	2.85 Mean
95% DL/2 (t) UCL	2.00 SD
	3.65 95% H-Stat (DL/2) UCL

Maximum Likelihood Estimate(MLE) Method
 MLE method failed to converge properly

N/A	Log ROS Method
	Mean in Log Scale
	SD in Log Scale
	Mean in Original Scale
	SD in Original Scale
	95% t UCL
	95% Percentile Bootstrap UCL
	95% BCA Bootstrap UCL
	95% H-UCL

Gamma Distribution Test with Detected Values Only
 k star (bias corrected)
 Theta Star
 nu star

1.58	Data Distribution Test with Detected Values Only
0.87	1.58 Data appear Normal at 5% Significance Level

31.68

A-D Test Statistic
 5% A-D Critical Value
 K-S Test Statistic
 5% K-S Critical Value
 Data appear Gamma Distributed at 5% Significance Level

0.28	Nonparametric Statistics
0.74	Kaplan-Meier (KM) Method
0.74	Mean
0.27	SD
	SE of Mean

95% KM (t) UCL

95% KM (z) UCL

95% KM (jackknife) UCL

0.03 95% KM (bootstrap t) UCL

2.80 95% KM (BCA) UCL

1.30 95% KM (Percentile Bootstrap) UCL

1.20 95% KM (Chebyshev) UCL

0.86 97.5% KM (Chebyshev) UCL

1.41 99% KM (Chebyshev) UCL

0.92

53.48 Potential UCLs to Use

37.68 95% KM (t) UCL

1.84 95% KM (Percentile Bootstrap) UCL

1.90

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Cadmium

General Statistics

Number of Valid Data	19.00	Number of Detected Data	5.00
Number of Distinct Detected Data	5.00	Number of Non-Detect Data	14.00
		Percent Non-Detects	0.74

Raw Statistics

Minimum Detected	0.08	Log-transformed Statistics	-2.53
Maximum Detected	1.90	Maximum Detected	0.64
Mean of Detected	0.50	Mean of Detected	-1.41
SD of Detected	0.78	SD of Detected	1.20
Minimum Non-Detect	1.00	Minimum Non-Detect	0.00
Maximum Non-Detect	5.00	Maximum Non-Detect	1.61

Note: Data have multiple DLs - Use of KM Method is recommended
 Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods), Number treated as Detected
 Observations < Largest ND are treated as NDs Single DL Non-Detect Percentage

Warning: There are only 5 Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set
 the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic	0.61 Shapiro Wilk Test Statistic
5% Shapiro Wilk Critical Value	0.76 5% Shapiro Wilk Critical Value
Data not Normal at 5% Significance Level	Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution
Mean	DL/2 Substitution Method
SD	1.45 Mean
95% DL/2 (t) UCL	1.09 SD
	1.88 95% H-Stat (DL/2) UCL

Maximum Likelihood Estimate(MLE) Method
 MLE method failed to converge properly

N/A	Log ROS Method
	Mean in Log Scale
	SD in Log Scale
	Mean in Original Scale
	SD in Original Scale
	95% t UCL
	95% Percentile Bootstrap UCL
	95% BCA Bootstrap UCL
	95% H-UCL

Gamma Distribution Test with Detected Values Only
 K star (bias corrected)
 Theta Star
 nu star

0.46	Data Distribution Test with Detected Values Only
	0.46 Data appear Lognormal at 5% Significance Level
1.09	
4.61	

A-D Test Statistic
 5% A-D Critical Value
 K-S Test Statistic
 5% K-S Critical Value
 Data not Gamma Distributed at 5% Significance Level

0.85	Nonparametric Statistics
0.70	Kaplan-Meier (KM) Method
0.70	Mean
0.37	SD
	SE of Mean

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data	0.85 Nonparametric Statistics
Minimum	0.70 Kaplan-Meier (KM) Method
Maximum	0.70 Mean
Mean	0.37 SD
Median	
SD	
k star	SE of Mean
Theta star	95% KM (t) UCL
nu star	95% KM (z) UCL
AppChi2	95% KM (jackknife) UCL
95% Gamma Approximate UCL	0.00 95% KM (bootstrap t) UCL
95% Adjusted Gamma UCL	1.90 95% KM (BCA) UCL
	0.41 95% KM (Percentile Bootstrap) UCL
	0.18 95% KM (Chebyshev) UCL
	0.53 97.5% KM (Chebyshev) UCL
	0.21 99% KM (Chebyshev) UCL
	1.97
	7.97 Potential UCLs to Use
	2.72 95% KM (BCA) UCL

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
 These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
 For additional insight, the user may want to consult a statistician.

Chromium

General Statistics		
Number of Valid Data	19.00	Number of Detected Data
Number of Distinct Detected Data	15.00	Number of Non-Detect Data
		Percent Non-Detects
Raw Statistics		Log-transformed Statistics
Minimum Detected	1.40	Minimum Detected
Maximum Detected	211.00	Maximum Detected
Mean of Detected	35.87	Mean of Detected
SD of Detected	51.49	SD of Detected
Minimum Non-Detect	2.00	Minimum Non-Detect
Maximum Non-Detect	10.00	Maximum Non-Detect
Note: Data have multiple DLs - Use of KM Method is recommended.		
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Non-Detect
Observations < Largest ND are treated as NDs		Number treated as Detected
		Single DL Non-Detect Percentage
UCL Statistics		
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic	0.56	Shapiro Wilk Test Statistic
5% Shapiro Wilk Critical Value	0.88	5% Shapiro Wilk Critical Value
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level
Assuming Normal Distribution		Assuming Lognormal Distribution
DL/2 Substitution Method		DL/2 Substitution Method
Mean	29.16	Mean
SD	47.34	SD
95% DL/2 (t) UCL	48.00	95% H-Stat (DL/2) UCL
Maximum Likelihood Estimate(MLE) Method		Log ROS Method
Mean	17.12	Mean in Log Scale
SD	58.33	SD in Log Scale
95% MLE (t) UCL	40.33	Mean in Original Scale
95% MLE (Tiku) UCL	41.53	SD in Original Scale
		95% t UCL
		95% Percentile Bootstrap UCL
		95% BCA Bootstrap UCL
		95% H UCL
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only
k star (bias corrected)	0.85	Data appear Gamma Distributed at 5% Significance Level
Theta Star	42.00	
nu star	25.62	
A-D Test Statistic		0.75 Nonparametric Statistics
5% A-D Critical Value		0.76 Kaplan-Meier (KM) Method
K-S Test Statistic		0.76 Mean
5% K-S Critical Value	0.23	SD
Data appear Gamma Distributed at 5% Significance Level		SE of Mean
		95% KM (t) UCL
Assuming Gamma Distribution		95% KM (z) UCL
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL
Minimum	0.00	95% KM (bootstrap t) UCL
Maximum	211.00	95% KM (BCA) UCL
Mean	28.32	95% KM (Percentile Bootstrap) UCL
Median	17.70	95% KM (Chebyshev) UCL
SD	47.83	97.5% KM (Chebyshev) UCL
k star	0.20	99% KM (Chebyshev) UCL
Theta star	144.40	
Nu star	7.45	Potential UCLs to Use
AppChi2	2.42	95% KM (Chebyshev) UCL
95% Gamma Approximate UCL	87.14	
95% Adjusted Gamma UCL	96.87	

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Cobalt

General Statistics

Number of Valid Data	19.00	Number of Detected Data	9.00
Number of Distinct Detected Data	8.00	Number of Non-Detect Data	10.00
		Percent Non-Detects	0.53

Raw Statistics

Minimum Detected	0.34	Log-transformed Statistics Minimum Detected	-1.08
Maximum Detected	15.00	Maximum Detected	2.71
Mean of Detected	4.81	Mean of Detected	1.05
SD of Detected	4.54	SD of Detected	1.24
Minimum Non-Detect	1.00	Minimum Non-Detect	0.00
Maximum Non-Detect	50.00	Maximum Non-Detect	3.91

Note: Data have multiple DLs - Use of KM Method is recommended
 Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods),
 Number treated as Detected
 Observations < Largest ND are treated as NDs
 Single DL Non-Detect Percentage

Warning: There are only 9 Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set
 the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only		
Shapiro Wilk Test Statistic	0.84	Shapiro Wilk Test Statistic	0.92
5% Shapiro Wilk Critical Value	0.83	5% Shapiro Wilk Critical Value	0.83
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution		
Mean	12.86	Mean	1.78
SD	11.14	SD	1.60
95% DL/2 (t) UCL	17.29	95% H-Stat (DL/2) UCL	80.42

Maximum Likelihood Estimate(MLE) Method
 MLE method failed to converge properly

N/A	Log ROS Method	
	Mean in Log Scale	0.74
	SD in Log Scale	1.23
	Mean in Original Scale	3.89
	SD in Original Scale	4.20
	95% t UCL	5.56
	95% Percentile Bootstrap UCL	5.54
	95% BCA Bootstrap UCL	5.85
	95% H-UCL	10.45

Gamma Distribution Test with Detected Values Only
 K star (bias corrected)
 Theta Star
 nu star

0.80	Data Distribution Test with Detected Values Only
	0.80 Data appear Normal at 5% Significance Level
6.01	
14.42	

A-D Test Statistic
 5% A-D Critical Value
 K-S Test Statistic
 5% K-S Critical Value
 Data appear Gamma Distributed at 5% Significance Level

0.37	Nonparametric Statistics	
0.74	Kaplan-Meier (KM) Method	
0.74	Mean	4.03
0.29	SD	4.22
	SE of Mean	1.35
	95% KM (t) UCL	6.37
	95% KM (z) UCL	6.25
	95% KM (jackknife) UCL	6.39

Assuming Gamma Distribution
 Gamma ROS Statistics using Extrapolated Data

0.00 95% KM (bootstrap t) UCL

Minimum	15.00	95% KM (BCA) UCL	6.47
Maximum			
Mean	3.96	95% KM (Percentile Bootstrap) UCL	6.40
Median	2.68	95% KM (Chebyshev) UCL	9.91
SD	4.07	97.5% KM (Chebyshev) UCL	12.45
k star	0.22	99% KM (Chebyshev) UCL	17.45
Theta star	18.09		
Nu star	8.31	Potential UCLs to Use	
AppChi2	2.92	95% KM (t) UCL	6.37
95% Gamma Approximate UCL	11.27	95% KM (Percentile Bootstrap) UCL	6.40
95% Adjusted Gamma UCL	12.44		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
 These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
 For additional insight, the user may want to consult a statistician.

Iron

General Statistics

Number of Valid Data	19.00	Number of Detected Data	16.00
Number of Distinct Detected Data	15.00	Number of Non-Detect Data	3.00
		Percent Non-Detects	0.16

Raw Statistics

Minimum Detected	185.00	Log-transformed Statistics Minimum Detected	5.22
Maximum Detected	9990.00	Maximum Detected	9.21
Mean of Detected	1750.00	Mean of Detected	6.83
SD of Detected	2603.00	SD of Detected	1.08
Minimum Non-Detect	100.00	Minimum Non-Detect	4.61
Maximum Non-Detect	100.00	Maximum Non-Detect	4.61

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic	0.59 Shapiro Wilk Test Statistic
5% Shapiro Wilk Critical Value	0.89 5% Shapiro Wilk Critical Value
Data not Normal at 5% Significance Level	Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution
Mean	DL/2 Substitution Method
SD	Mean
95% DL/2 (t) UCL	6.37

2460.00 SD
2460.00 95% H-Stat (DL/2) UCL 5449.00

Maximum Likelihood Estimate(MLE) Method

Mean	1206.00 Mean in Log Scale	6.44
SD	2692.00 SD in Log Scale	1.36
95% MLE (t) UCL	2277.00 Mean in Original Scale	1486.00
95% MLE (Tiku) UCL	2237.00 SD in Original Scale	2457.00
	95% t UCL	2464.00
	95% Percentile Bootstrap UCL	2465.00
	95% BCA Bootstrap UCL	2917.00
	95% H UCL	4335.00

Gamma Distribution Test with Detected Values Only

k star (bias corrected)	0.78 Data appear Lognormal at 5% Significance Level
Theta Star	2234.00
nu star	25.06

A-D Test Statistic

5% A-D Critical Value	0.77 Kaplan-Meier (KM) Method
K-S Test Statistic	0.77 Mean
5% K-S Critical Value	0.22 SD
Data not Gamma Distributed at 5% Significance Level	SE of Mean

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data	95% KM (t) UCL	2481.00
Minimum	95% KM (z) UCL	2431.00
Maximum	95% KM (jackknife) UCL	2471.00
Mean	0.00 95% KM (bootstrap t) UCL	4532.00
Median	9990.00 95% KM (BCA) UCL	2557.00
SD	1473.00 95% KM (Percentile Bootstrap) UCL	2486.00
K star	770.00 95% KM (Chebyshev) UCL	3963.00
Theta star	2465.00 97.5% KM (Chebyshev) UCL	5027.00
Nu star	0.20 99% KM (Chebyshev) UCL	7119.00
AppChi2	7306.00	
95% Gamma Approximate UCL	7.66 Potential UCLs to Use	
95% Adjusted Gamma UCL	2.54 97.5% KM (Chebyshev) UCL	5027.00

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Lead

General Statistics

Number of Valid Data	19.00	Number of Detected Data	11.00
Number of Distinct Detected Data	10.00	Number of Non-Detect Data	8.00
		Percent Non-Detects	0.42

Raw Statistics

Minimum Detected	0.28	Log-transformed Statistics Minimum Detected	-1.27
Maximum Detected	48.60	Maximum Detected	3.88
Mean of Detected	7.36	Mean of Detected	1.05
SD of Detected	14.03	SD of Detected	1.33
Minimum Non-Detect	1.00	Minimum Non-Detect	0.00
Maximum Non-Detect	3.00	Maximum Non-Detect	1.10

Note: Data have multiple DLs - Use of KM Method is recommended. Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods), Number treated as Detected
 Observations < Largest ND are treated as NDs Single DL Non-Detect Percentage

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic	0.51 Shapiro Wilk Test Statistic
5% Shapiro Wilk Critical Value	0.85 5% Shapiro Wilk Critical Value
Data not Normal at 5% Significance Level	Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution
Mean	DL/2 Substitution Method
SD	4.84 Mean
95% DL/2 (t) UCL	10.89 SD
	9.17 95% H-Stat (DL/2) UCL

Maximum Likelihood Estimate(MLE) Method

Mean	Log ROS Method
SD	29.06 Mean in Log Scale
95% MLE (t) UCL	18.54 SD in Log Scale
95% MLE (Tiku) UCL	36.43 Mean in Original Scale
	46.99 SD in Original Scale
	95% t UCL
	95% Percentile Bootstrap UCL
	95% BCA Bootstrap UCL
	95% H UCL

Gamma Distribution Test with Detected Values Only

k star (bias corrected)	Data Distribution Test with Detected Values Only
Theta Star	0.53 Data appear Lognormal at 5% Significance Level
nu star	13.89
	11.66

A-D Test Statistic

5% A-D Critical Value	0.77 Kaplan-Meier (KM) Method
K-S Test Statistic	0.77 Mean
5% K-S Critical Value	0.27 SD
Data not Gamma Distributed at 5% Significance Level	SE of Mean
	95% KM (t) UCL

Assuming Gamma Distribution

Minimum	95% KM (jackknife) UCL
Maximum	0.00 95% KM (bootstrap t) UCL
Mean	48.60 95% KM (BCA) UCL
Median	5.43 95% KM (Percentile Bootstrap) UCL
SD	2.00 95% KM (Chebyshev) UCL
k star	11.03 97.5% KM (Chebyshev) UCL
Theta star	0.20 99% KM (Chebyshev) UCL
Nu star	26.93
AppChi2	7.66 Potential UCLs to Use
95% Gamma Approximate UCL	2.54 97.5% KM (Chebyshev) UCL
95% Adjusted Gamma UCL	16.37
	18.17

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Manganese

General Statistics

Number of Valid Data	19.00	Number of Detected Data	18.00
Number of Distinct Detected Data	18.00	Number of Non-Detect Data	1.00
		Percent Non-Detects	0.05

Raw Statistics

Minimum Detected	3.70	Log-transformed Statistics Minimum Detected	1.31
Maximum Detected	231.00	Maximum Detected	5.44
Mean of Detected	72.23	Mean of Detected	3.90
SD of Detected	60.42	SD of Detected	0.99
Minimum Non-Detect	15.00	Minimum Non-Detect	2.71
Maximum Non-Detect	15.00	Maximum Non-Detect	2.71

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic	0.87 Shapiro Wilk Test Statistic
5% Shapiro Wilk Critical Value	0.90 5% Shapiro Wilk Critical Value
Data not Normal at 5% Significance Level	Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution
Mean	DL/2 Substitution Method
SD	Mean
95% DL/2 (t) UCL	3.81
	60.57 SD
	92.92 95% H-Stat (DL/2) UCL
	153.10

Maximum Likelihood Estimate(MLE) Method

Mean	66.05 Mean in Log Scale	3.80
SD	63.12 SD in Log Scale	1.06
95% MLE (t) UCL	91.16 Mean in Original Scale	68.80
95% MLE (Tiku) UCL	90.44 SD in Original Scale	60.59
	95% t UCL	92.91
	95% Percentile Bootstrap UCL	92.92
	95% BCA Bootstrap UCL	95.99
	95% H UCL	154.00

Gamma Distribution Test with Detected Values Only

k star (bias corrected)	Data Distribution Test with Detected Values Only
Theta Star	1.27 Data appear Gamma Distributed at 5% Significance Level
nu star	57.04

A-D Test Statistic

5% A-D Critical Value	0.29 Nonparametric Statistics
K-S Test Statistic	0.76 Kaplan-Meier (KM) Method
5% K-S Critical Value	0.76 Mean
Data appear Gamma Distributed at 5% Significance Level	68.62
	0.21 SD
	SE of Mean
	95% KM (t) UCL
	95% KM (z) UCL
	95% KM (jackknife) UCL
	0.00 95% KM (bootstrap t) UCL
	95% KM (BCA) UCL
	68.43 95% KM (Percentile Bootstrap) UCL
	46.60 95% KM (Chebyshev) UCL
	61.01 97.5% KM (Chebyshev) UCL
	0.46 99% KM (Chebyshev) UCL
	148.50
	17.51 Potential UCLs to Use
	9.04 95% KM (Chebyshev) UCL
	132.60
	140.80

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Mercury

General Statistics

Number of Valid Data	19.00	Number of Detected Data	2.00
Number of Distinct Detected Data	2.00	Number of Non-Detect Data	17.00
		Percent Non-Detects	0.89

Raw Statistics

Minimum Detected	0.13	Log-transformed Statistics	-2.04
Maximum Detected	0.15	Maximum Detected	-1.90
Mean of Detected	0.14	Mean of Detected	-1.97
SD of Detected	0.01	SD of Detected	0.10
Minimum Non-Detect	0.20	Minimum Non-Detect	-1.61
Maximum Non-Detect	0.20	Maximum Non-Detect	-1.61

Warning: Data set has only 2 Distinct Detected Values.

This may not be adequate enough to compute meaningful and reliable test statistics and estimates.

The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.

Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.

However, results obtained using 4 to 9 distinct values may not be reliable.

It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only	N/A	Lognormal Distribution Test with Detected Values Only	N/A
Shapiro Wilk Test Statistic	N/A	Shapiro Wilk Test Statistic	N/A
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.10	Mean	-2.27
SD	0.01	SD	0.11
95% DL/2 (t) UCL	0.11	95% H-Stat (DL/2) UCL	0.11
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% t UCL	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
		95% H-UCL	N/A
Gamma Distribution Test with Detected Values Only	N/A	Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.14
5% K-S Critical Value	N/A	SD	0.01
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.01
		95% KM (t) UCL	0.16
		95% KM (z) UCL	0.16
		95% KM (jackknife) UCL	N/A
Assuming Gamma Distribution		95% KM (bootstrap) UCL	N/A
Gamma ROS Statistics using Extrapolated Data	N/A	95% KM (BCA) UCL	N/A
Minimum	N/A	95% KM (Percentile Bootstrap) UCL	N/A
Maximum	N/A	95% KM (Chebyshev) UCL	0.18
Mean	N/A	97.5% KM (Chebyshev) UCL	0.20
Median	N/A	99% KM (Chebyshev) UCL	0.24
SD	N/A		
k star	N/A		
Theta star	N/A	Potential UCLs to Use	
Nu star	N/A	95% KM (t) UCL	0.16
AppChi2	N/A	95% KM (% Bootstrap) UCL	N/A
95% Gamma Approximate UCL	N/A		
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Vanadium

General Statistics

Number of Valid Data	18.00	Number of Detected Data	10.00
Number of Distinct Detected Data	10.00	Number of Non-Detect Data	8.00
		Percent Non-Detects	0.44

Raw Statistics

Minimum Detected	0.48	Log-transformed Statistics Minimum Detected	-0.73
Maximum Detected	43.10	Maximum Detected	3.76
Mean of Detected	14.67	Mean of Detected	2.16
SD of Detected	14.29	SD of Detected	1.27
Minimum Non-Detect	5.00	Minimum Non-Detect	1.61
Maximum Non-Detect	50.00	Maximum Non-Detect	3.91

Note: Data have multiple DLs - Use of KM Method is recommended. Number treated as Non-Detect
 For all methods (except KM, DL/2, and ROS Methods), Number treated as Detected
 Observations < Largest ND are treated as NDs Single DL Non-Detect Percentage

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic	0.81 Shapiro Wilk Test Statistic
5% Shapiro Wilk Critical Value	0.84 5% Shapiro Wilk Critical Value
Data not Normal at 5% Significance Level	Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method	Assuming Lognormal Distribution
Mean	DL/2 Substitution Method
SD	14.26 Mean
95% DL/2 (t) UCL	12.96 SD
	19.57 95% H-Stat (DL/2) UCL

Maximum Likelihood Estimate(MLE) Method
 MLE method failed to converge properly

N/A	Log ROS Method
	Mean in Log Scale
	SD in Log Scale
	Mean in Original Scale
	SD in Original Scale
	95% t UCL
	95% Percentile Bootstrap UCL
	95% BCA Bootstrap UCL
	95% H-UCL

Gamma Distribution Test with Detected Values Only
 k star (bias corrected)
 Theta Star
 nu star

0.83	Data Distribution Test with Detected Values Only
	Data appear Gamma Distributed at 5% Significance Level

A-D Test Statistic
 5% A-D Critical Value
 K-S Test Statistic
 5% K-S Critical Value
 Data appear Gamma Distributed at 5% Significance Level

0.33	Nonparametric Statistics
0.75	Kaplan-Meier (KM) Method
0.75	Mean
0.27	SD
	SE of Mean

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data	95% KM (z) UCL
Minimum	95% KM (jackknife) UCL
Maximum	0.00 95% KM (bootstrap t) UCL
Mean	43.10 95% KM (BCA) UCL
Median	10.50 95% KM (Percentile Bootstrap) UCL
SD	6.90 95% KM (Chebyshev) UCL
k star	12.73 97.5% KM (Chebyshev) UCL
Theta star	0.20 99% KM (Chebyshev) UCL
Nu star	52.77

AppChi2	7.16 Potential UCLs to Use
95% Gamma Approximate UCL	2.26 95% KM (BCA) UCL
95% Adjusted Gamma UCL	33.28
	37.51
Note: DL/2 is not a recommended method.	17.97

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

APPENDIX E
DATA USABILITY WORKSHEET

DATA USABILITY WORKSHEET**Site:** 216 Paterson Plank Road Site, Carlstadt, NJ**Medium:** Groundwater

Note: The data used in the risk assessment included all monitoring events conducted between December 2006 and December 2010. All data used in the assessment were independently validated and determined to be useable based on USEPA guidelines. Data quality narratives are included in the associated investigation reports.

Activity	Comment
Field Sampling	
Discuss sampling problems and field conditions that affect data usability.	Groundwater samples were collected from 29 permanent monitoring wells in the till and bedrock and from 5 aquifer profile borings. There were no problems reported from the field collection program that could affect data usability.
Are samples representative of receptor exposure for this medium (e.g. sample depth, grab vs. composite, filtered vs. unfiltered, low flow, etc.)?	Groundwater samples from permanent wells submitted for organic and inorganic analyses were non-filtered samples collected using low flow purging and sampling techniques. Aquifer profile borings submitted for VOC and 1,4-dioxane analyses were collected by volume average methods. These samples are representative of receptor exposure.
Assess the effect of field QC results on data usability.	<p>Field QC samples were evaluated as part of the Data Quality Assessments that were performed according to USEPA Region II guidelines for the respective methods and the associated narratives were provided in the investigation reports.</p> <p>In all assessments, the data were determined to be acceptable for their intended use, with the exception of data qualified as "R". R qualified data were not used in this risk assessment. The data completeness (i.e. the ratio of the amount of valid data obtained to the amount expected in each monitoring event) ranged from 96.3% to 100% .</p>
Summarize the effect of field sampling issues on the risk assessment, if applicable.	There were no field sampling issues that would affect the risk assessment.

Analytical Techniques	
Were the analytical methods appropriate for quantitative risk assessment?	Yes. Samples were analyzed by CLP methods current at the time of each sampling event. Specifically: <ul style="list-style-type: none"> • Volatile Organic Compounds (VOCs), following USEPA Contract Laboratory Program (CLP) Statement of Work (SOW) for Multi-Media, Multi-Concentration Organics Analysis OLM04.3, March 2003; for Low Concentration Organic Analysis, OLC03.2, (December 2000); and following USEPA CLP SOW for Organic Analysis; Multi-Media, Multi-Concentration, SOM01.1 (May, 2005) and, modifications updating SOM01.1 to SOM01.2, October 5, 2006 (Updated February 12, 2007) Amended April 11, 2007 • 1,4-Dioxane by SIM following USEPA CLP SOW for Low Concentration Organic Analysis, OLC03.2, (December 2000) • TCL SVOCs following USEPA CLP SOW for Multi-Media, Multi-Concentration Organics Analysis OLM04.3, (March 2003) • TCL Pesticides and PCBs following USEPA CLP SOW for Multi-Media, Multi-Concentration Organics Analysis OLM04.3, (March 2003) • TCL SVOCs, TCL Pesticides, and TCL PCBs following USEPA Contract Laboratory Program (CLP) Statement of Work (SOW) for Organic Analysis; Multi-Media, Multi-Concentration, SOM01.1 (May, 2005) and, modifications updating SOM01.1 to SOM01.2, October 5, 2006 (Updated February 12, 2007) Amended April 11, 2007; • Metals following Multi-media, Multi-Concentration Inorganic Analysis by EPA CLP SOW ILM04.1, (March 2003), and following USEPA SOW for Inorganic Analysis; Multi-Media, Multi-Concentration ILM05.3 (March, 2004) and, ILM05.3 to ILM05.4 Summary of Changes (December 1, 2006).
Were detection limits adequate?	Yes. The method detection limits were below federal MCLs and state groundwater standards. In most cases the quantitation limits were also below these criteria.
Summarize the effect of analytical technique issues on the risk assessment, if applicable.	There are no Analytical Technique Issues that would affect the risk assessment
Data Quality Objectives	
Precision - How were duplicates handled?	Relative percent differences (RPDs) were calculated for each primary and duplicate sample; where the RPDs were greater than the QC criteria the results were qualified as estimated "J". No data were rejected due to unacceptable RPDs.
Accuracy - How were split samples handled?	No split samples were collected
Representativeness - Indicate any problems associated with data representativeness (e.g., trip blank or rinsate blank contamination, chain of custody problems, etc.).	Data were qualified as estimated or rejected, as described in the data quality narratives, when contamination was identified in trip blanks, or rinsate blanks. COCs were reviewed and found to be satisfactory. The data used in the risk assessment is therefore considered representative.

Data Quality Objectives (continued)	
Completeness - Indicate any problems associated with data completeness (e.g., incorrect sample analysis, incomplete sample records, problems with field procedures, etc.).	No problems were associated with data completeness. The data completeness (i.e. the ratio of the amount of valid data obtained to the amount expected in each monitoring event) ranged from 96.3% to 100% .
Comparability - Indicate any problems associated with data comparability.	No problems were associated with data comparability
Were the DQOs specified in the QAPP satisfied?	As described in greater detail in the data quality narratives, the data quality was evaluated as specified in the QAPP, and the objectives were satisfied.
Summarize the effect of DQO issues on the risk assessment, if applicable.	There are no DQO issues that should affect the risk assessment.
Data Validation and Interpretation	
What are the data validation requirements?	For organic samples, validators were required to check the following items: holding times, instrument performance checks, initial and continuing calibrations, blanks, system monitoring compounds, matrix spike/matrix spike duplicates, regional QA/QC, internal standards, target compound identification, contract required quantitation limits, tentatively identified compounds, system performance, and overall assessment of data. For inorganic samples, validators were required to check holding times, calibration, blanks, interference checks, laboratory control samples, duplicate samples, matrix spike samples, furnace atomic absorption QC, ICP Serial Dilution, sample result verification, field duplicates, and perform an overall assessment of the data.
What method or guidance was used to validate the data?	Data Quality Assessments for groundwater samples were done according to USEPA Region II guidelines for the respective methods
Was the data validation method consistent with guidance? Discuss any discrepancies.	The data validation method was consistent with regional guidance.
Were all data qualifiers defined? Discuss those which were not.	All Data qualifiers were defined in both the data quality narratives, and on tables where the data was presented
Which qualifiers represent useable data?	All data qualifiers, with the exception of "R" represent useable data
Which qualifiers represent unusable data?	R - Rejected
How are tentatively identified compounds handled?	TICs were not reported, nor were they used in the risk assessment.

Data Validation and Interpretation (continued)	
Summarize the effect of data validation and interpretation issues on the risk assessment, if applicable.	Data qualified as "R" were determined to be unusable and were not used in the risk assessment. All other data was used in the risk assessment.
Additional notes:	

At Golder Associates we strive to be the most respected global group of companies specializing in ground engineering and environmental services. Employee owned since our formation in 1960, we have created a unique culture with pride in ownership, resulting in long-term organizational stability. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees now operating from offices located throughout Africa, Asia, Australasia, Europe, North America and South America.

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